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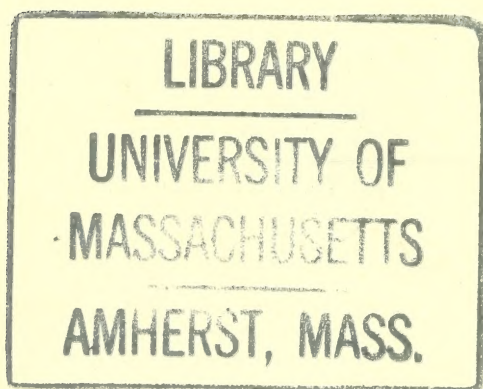
Inspection of Commercial Feedstuffs

BY

Feed Control Service Staff
Massachusetts Agricultural Experiment Station



This is the fifty-ninth report on feedstuffs inspection. Included are data regarding the composition of mixed feeds, mineral and vitamin supplements, feed ingredients, and medicated feeds. Other information of interest to the manufacturers, distributors, and users of feed is also included.



INSPECTION OF COMMERCIAL FEEDSTUFFS

By Feed Control Service Staff:

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INTRODUCTION

From time to time in past issues of this bulletin the changing pattern of feed control work has been discussed. It has been pointed out that feeds now must be analyzed for nutritional and disease prevention factors unknown only a few years ago.

Present nutritional knowledge extends far beyond the crude protein, fat, and fiber stage. Yet most mixed feed tags, so far as quantitative guarantees are concerned, still reflect only the nutritional facts known in the "horse and buggy" days of forty or fifty years ago. It is true that the tags contain a qualitative listing of all the recently discovered nutritional and other factors now being put into feeds. This is no insurance, however, that these factors are present in the proper amounts.

Under present tag requirements it is possible for a feed containing the essential factors in amounts far below those recommended by nutritionists to indicate truthfully on its tag exactly the same guarantees and list of ingredients as those carried on the tag of a feed mixed in strict accordance with nutritional recommendations. Obviously such tag information is of little value to the purchaser in helping him to distinguish between a good and an inferior feed. Equally obvious is the fact that the situation can be remedied by requiring that the tag contain either the quantitative declaration of the more important nutritional factors or a statement that the feed meets the minimum nutritional requirements established by either the National Research Council or a similar organization.

Under such a system the qualitative listing of some of the ingredients at present would be unnecessary. In time, as the frontiers of nutritional knowledge are pushed back still farther, perhaps the listing of most ingredients eventually may be omitted. If it is known that all essential factors are present in the proper amounts it is relatively unimportant to know what ingredients are used to furnish these factors. This would not only allow the manufacturer more freedom in the selection and substitution of ingredients but would work to the advantage of the farmer by enabling the manufacturer to take full advantage of price fluctuations in the cost of ingredients.

POISON CASES

The cases described here do not include all those submitted to the Control Service during the past year. The first three have been selected because they illustrate best that most instances of livestock poisoning can be prevented if farmers and others are a little more careful in handling and disposing of insecticides, weed killers, lead paint, etc.

One case involves an old poultry range that was being used as a pasture. A poultry house that once stood on the range burned down. Nobody paid any attention to the pile of ashes except a few head of livestock who found the taste of something in the ashes to their liking, only to die later of lead poisoning. Subsequent investigation disclosed that the poultry house apparently had contained a few old pails still holding lead paint in lethal amounts.

In another instance a number of cows broke through a fence and wandered over to a dump. Some of the cows ate a material that caused their death. Analysis of the stomach contents of these cows showed the presence of massive quantities of lead arsenate. A sample of some material from the dump was found to be a mixture of sulfur, lime, inert material, and lead arsenate.

In a third case, the Control Service received a large jar containing the stomach contents of two heifers and a small jar with the stomach contents of a third heifer. Here again it was almost obvious that poisoning was the cause of death, since the animals involved had broken through a fence and had access to an area where insecticides were stored and mixed. A sample of the insecticide that the animals were supposed to have eaten was found to be lead arsenate. The stomach contents in the large jar also contained large amounts of lead arsenate. However, the contents in the small jar contained only lead and no arsenic, indicating that the third animal, unlike the other two, died of paint poisoning.

After the results were reported to the veterinarian, he admitted that, following the broken fence incident, the animals were moved to another farm where the third animal died shortly afterwards. It was presumed all three animals had died because of the same poison eaten at the first farm. This was disproved when an examination of the second pasture disclosed the presence of a partially filled paint pail evidently thoroughly licked by some animal.

These cases prove the point that when the hazards connected with the handling and disposal of insecticides are being considered, it should be borne in mind that livestock sometimes do break fences. Therefore, insecticides and other toxic materials should be so used, stored, and disposed of that they are inaccessible to livestock under any reasonable circumstances.

As one easy preventive measure, farmers should make it a practice each spring to inspect thoroughly all pastures and other areas frequented by livestock to make certain that no harmful materials are present. If the pasture adjoins a road, weekly inspections should be made, preferably on Monday morning, along the fence near the road. To some people traveling along a country road a pasture fence seems to be an inviting target over which to throw the week's accumulation of rubbish, which may include insecticides and paint pails.

Possibly, the veterinarians, the Extension Service, the feed dealers, the Control Service, and others interested in the farmer's problems can do a better educational job in helping the farmer prevent some of the future livestock losses under circumstances similar to those cited here.

It must be gratifying to the veterinarian when he makes a correct diagnosis in a poison case in which elusive and somewhat contradictory diagnostic factors may be involved. The chemist, too, finds a certain satisfaction in the sense of a job well done when he identifies and measures the toxic ingredient that caused

death. The farmer, however, derives little comfort from the knowledge that several head of his finest stock would still be alive if he had taken a little more care in the disposal of insecticide or paint containers.

The Control Service occasionally receives requests for analytical help in another type of poisoning. This usually involves the examination of viscera or stomach contents of pets. The sample is generally submitted by someone who has had trouble with his neighbors. The question asked by the Control Service always is "What are you going to do with the analytical results?"

Many people have the wrong idea about the value of such results. For example, two neighbors are not on speaking terms and one has been heard to say that he intended to "get even" with his neighbor because of some real or fancied grievance. Some time later the neighbor's dog dies, and the veterinarian diagnoses the case as one of poisoning. The owner usually thinks that if he can only prove the presence of a poison by chemical test he would be able to haul his neighbor into court and make him pay. It is not that easy as the following incident will show.

Several months ago the S.P.C.A. agent for the Springfield area brought in a sample for analysis and said he thought he would have a strong case against a particular person if he were able to prove the presence of a poison in the sample. The facts presented by the agent seemed strong enough to warrant the analysis of the sample.

It was disclosed that a certain woman had publicly avowed her intention to do something about her neighbor's cats, particularly those that chose her flower gardens in which to do their digging. A few days later one of her neighbors saw her throwing pieces of something on different areas of her lawn. When she went around the house to the other half of the lawn, the neighbor walked over and picked up what seemed to be a piece of fish. He placed this sample in a glass jar and asked his daughter to take it to the S.P.C.A. hospital. This was done and the jar was placed in a refrigerator. Several days later the sample was brought to the Control Service.

The analysis showed the presence of zinc and active phosphorus. It was concluded that the sample contained zinc phosphide, a rat poison. Carrying the test further, a portion of the sample was fed to a rat. The rat died.

After the report was made, the suspected woman was summoned into court, and the Control Service chemist appeared as a witness. After hearing the testimony the judge rendered a "not guilty" verdict. The judge made it clear that there was no doubt in his mind about the presence of the poison in the fish and that it was present in lethal quantity. He reached the "not guilty" decision because:

1. The sample was brought to the S.P.C.A. hospital in an unsealed container and was handled by several people before reaching the Control Service.
2. The refrigerator in which the sample was kept for several days was accessible to several people. There was the possibility of contamination of the sample after it had been picked up from the lawn. In other words, the prosecution could not prove beyond doubt that the material the woman allegedly placed on the lawn was the same material as that analyzed by the Control Service.
3. The woman involved had a daughter about three or four years old. The judge stated he could not believe any woman would risk poisoning her child just to get rid of a few cats.

In most single cases of pet poisoning, therefore, it is almost futile to have an analysis made. The pet involved usually is one that is not confined and might have picked up some toxic material anywhere within a radius of a mile from the home. If circumstances are such that only a chemical analysis is needed to clinch the case against a particular person, such analysis may be warranted, but only if the precautions implied in the above case are followed in the handling of the sample.

When feed is suspected as the source of poisoning, and analysis of the feed is recommended by a veterinarian, the Control Service always cooperates. This is an essential part of feed control work and is well illustrated by the following case.

Information and samples received from veterinarians in the eastern part of the State indicated that one brand of dog food was responsible for the death of a number of dogs. The dogs died with the same symptoms in each case. There were extensive internal hemorrhages and usually bleeding at the nose and mouth. These symptoms are observed in cases of poisoning caused by a rat poison known as Warfarin.

Samples of feed taken at the places where poisoning occurred were fed to test groups of rats. Some of the rats died with exactly the same symptoms observed in the affected dogs.

Apparently, only one batch of dog food contained the toxic material, and the manufacturer could not explain how that batch became contaminated. Tests of subsequent batches showed them to be free of any toxic materials. The manufacturer paid the owners for the loss of the dogs.

Brands Substantially Complying with Guarantees

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
ckerman-Beardsley-Bennett, Inc.		Fort Orange 15% Test Ration.....	1
Corn Distillers Dried Grains.....	1	Fort Orange Turkey Grower.....	1
P. Adams Co.		Beacon Milling Co., Inc.	
Greylock Brand 16% Dairy Feed...	1	Auburn "16".....	1
Greylock Brand Laying Mash.....	1	Beacon "20".....	1
dams Packing Association, Inc.		Beacon Breeders Mash.....	1
Adams Dried Citrus Pulp.....	1	Beacon Broiler Finisher Pellets.....	1
bers Milling Co.		Beacon Dairy Fitting.....	1
Calf Manna.....	1	Beacon Duck Fitting.....	1
T. Allen Co.		Beacon "22" Egg Mash.....	1
Empire 41% Protein Cottonseed Meal	1	Beacon Fleshing Pellets.....	1
lied Mills, Inc.		Beacon "18" Growing Mash.....	1
Wayne 20% Dairy Ration.....	1	Beacon "18" Test Cow Ration.....	1
Wayne Egg Mash.....	2	Beacon Turkey and Game Bird Grower.....	1
Wayne 26% Egg & Breeder Supple- ment.....	1	Best Foods, Inc.	
Wayne Fattening Pellets.....	1	Oat Mill Feed.....	1
Wayne Fitting Ration.....	1	Blatchford Calf Meal Co.	
Wayne Growing Mash.....	1	Blatchford's Complete Calf Ration	1
Wayne Hog Supplement.....	1	Blatchford V-D.....	1
Wayne Horse Feed.....	1	Borden Grain Co.	
Wayne Mash Layer.....	1	Borden's Sweet 16 Dairy.....	1
Wayne 16% Milk Producer.....	1	Borden's 14 Fitting.....	1
Wayne Rabbit Ration.....	1	Borden's Laying Mash.....	1
Wayne Rocket Broiler Feed.....	1	Borden's Super Starter and Broiler Feed.....	1
Wayne Tail Curler.....	1	George B. Brown Corp.	
Wayne Test Cow Ration.....	1	Brown's Dairy Feed.....	1
Wayne Turkey Fitting Ration.....	1	Brown's Egg Mash.....	1
Wayne Turkey and Game Bird Grow- ing Mash.....	1	Brown's Growing Mash.....	1
Wayne Universal Breeder.....	1	Brown's Pig Feed.....	1
Wayne Universal Egg "E".....	1	Canada Starch Co., Ltd.	
Wayne Universal Grower.....	1	Edwardsburg Corn Gluten Meal....	1
merican Crystal Sugar Co.		Central Soya Co., Inc.	
Plain Dried-Beet Pulp.....	1	Central Star Brand 44% Solvent Extracted Soybean Oil Meal....	1
merican Maize-Products Co.		Citrus Feed Co.	
Cream of Corn Gluten Feed.....	1	Florida Crest All Sweet Dried Citrus Pulp.....	1
ady Farms Milling Co.		Clinton Foods, Inc.	
Arcady Wonderfat Station Feed....	1	McDonald Dried Citrus Pulp.....	1
Rockland Guinea Pig Diet.....	1	Clyde Milling Corp.	
Rockland Mouse Diet.....	1	Clyde Complete Growing Mash.....	1
Rockland Rat Diet Complete.....	1	Clyde Complete Laying Mash.....	1
ircraft-Wilkinson Co.		Clyde Dry and Freshening Ration ..	1
Cow-Eta Brand 41% Protein Cotton- seed Meal.....	1	Clyde Horse Feed.....	1
W. Bailey & Co.		Clyde Market Egg Mash.....	1
Pennant Brand Ace-Hi Broiler Ration	1	Clyde Milky-Las 16.....	1
Pennant Brand Calf Ration.....	1	Clyde Silolas.....	1
Pennant Brand Calf Starter.....	1	Clyde 18 Test Cow Ration.....	1
Pennant Brand Chick Starter.....	1	C-M-C 16% Dairy Ration.....	1
Pennant Brand Complete Egg Ration	1	Coatsworth & Cooper, Ltd.	
Pennant Brand 20% Dairy Ration...	1	C & C Wheat Bran.....	1
Pennant Brand 16% Dairy Ration.....	2	C & C Wheat Shorts.....	1
Pennant Brand Fitting Ration Coarse	1	Community Service, Inc.	
Pennant Brand Growing Mash.....	1	Community Complete Pig Feed.....	1
Pennant Brand Horse Feed.....	1	Community 18% Dairy Ration.....	1
Pennant Brand Laying Mash.....	2	Community 16% Dairy Ration.....	1
Pennant Brand Rabbit Pellets.....	1	Community Fitting Ration.....	1
Pennant Brand Turkey Fattener....	1	Community Growing Mash.....	1
ber & Bennett, Inc.		Community Laying Mash.....	1
ort Orange Horse Feed.....	1	Community Starter & Grower Mash	1
ort Orange 30% Mixing Ration....	1		

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Connecticut Grains Corp.		Wirthmore Super Pellets.....	1
Dried Brewers Grains.....	1	Wirthmore Turkey Fattening Ration	1
Consolidated Products Co.		Wirthmore Turkey Growing Ration	1
Kaff-A.....	1	Wirthmore Turkey Starter Ration	1
Consolidated Rendering Co.		Wirthmore Twin-Mix Calf Ration ..	1
Corenco Bone Meal.....	2	Crawford Brothers, Inc.	
Corenco Feeding Bone Meal.....	2	Complete Egg Mash.....	1
Corenco Fish Meal.....	1	Complete Growing Mash.....	1
Corenco 47% Meat & Bone Scrap...	1	20% Dairy Ration.....	1
Corenco 45% Meat & Bone Scrap...	2	Dry-Freshening.....	1
Copeland Flour Mills, Ltd.		Fitting Ration 14%.....	1
Dandy Wheat Bran.....	1	Growing Mash.....	1
Dandy Wheat Shorts.....	1	Hi-Energy Starter & Broiler Mash..	1
Corn Products Refining Co.		Laying Mash.....	1
Buffalo Brand Corn Gluten Feed....	1	Turkey Growing Mash.....	1
Diamond Brand Corn Gluten Meal..	1	James Cullen & Sons	
Courcy & Sons Grain Co.		Shorts.....	1
Courcy's Growing Feed.....	1	Dailey Mills, Inc.	
Courcy's Laying Mash.....	1	Double Diamond Broiler.....	1
Cover Grain & Feed Co.		Double Diamond Complete Egg Pro-	
C & P Grade A Laying Mash.....	1	ducer.....	1
C & P Growing Mash.....	1	Double Diamond Complete Grower	1
C & P Pig & Hog Feed.....	1	Double Diamond Complete Layer....	1
C & P Starter & Broiler Ration.....	1	Double Diamond Fitting Ration 14%	
C. A. Cowles, Inc.		with Pellets.....	1
Blue C Feed Hog and Pig Feed.....	1	Double Diamond Hical Pork Producer	1
Blue C Feed Laying Mash.....	1	Double Diamond 16% Hical Test	
Blue C Feed Super 16% Dairy Ration	1	Ration.....	1
Blue C Feed Super 12% Dairy Ration	1	Double Diamond Hical Turkey	
Chas. M. Cox Co.		Starter.....	1
Wirthmore Breeder Mash.....	1	Double Diamond 16% Milk Producer	1
Wirthmore Calf Starter Meal.....	1	Double Diamond Pig & Hog.....	1
Wirthmore Calving Ration.....	1	Dawnwood Farms	
Wirthmore Challenger 20 Dairy		Caf-Star.....	1
Ration.....	1	Delaware Mills, Inc.	
Wirthmore Challenger 16 Dairy		Delaware Egg Mash.....	1
Ration.....	2	Delaware Growing Mash.....	1
*Wirthmore Challenger Coarse 14		Delaware Laying Mash.....	1
Dairy Ration.....	1	Delaware Sweet 16% Dairy Feed...	1
Wirthmore Complete Chick Starter	2	Frank Diauto	
Wirthmore Complete Egg Ration...	1	Diauto's Broiler Ration.....	1
Wirthmore Complete Growing Ration	1	Diauto's Growing Mash.....	1
Wirthmore 20 Dairy Ration.....	1	F. Diehl & Son, Inc.	
Wirthmore 16 Dairy Ration.....	1	Breeder.....	2
Wirthmore Duck Fattening Pellets..	1	Dairy.....	1
Wirthmore Duck Growing Pellets...	1	Fitting.....	1
Wirthmore Fattening Pellets.....	1	Grower.....	2
Wirthmore 14 Fitting Ration.....	1	Layer.....	2
Wirthmore Growing Mash.....	1	Starter.....	2
Wirthmore Hog Grower.....	1	Dietrich & Gambrill, Inc.	
Wirthmore Horse Feed.....	1	D & G All-Purpose Mash.....	1
Wirthmore Improved Hi-Ener-G		D & G Breeder Mash.....	1
Starter and Broiler Ration.....	1	D & G Dry Cow-Fitting Ration....	1
Wirthmore Laying Mash.....	2	D & G Fleshing Mash.....	1
Wirthmore Pig & Sow Feed.....	1	D & G Pig & Sow Meal.....	1
Wirthmore Poultry Fitting.....	1	D & G Rabbit Feed Pelleted.....	1
Wirthmore Poultry Flush.....	1	D & G Special Broiler Mash.....	1
Wirthmore Producer 16 Dairy.....	1	D & G Turkey Growing Mash.....	1
Wirthmore Quickies.....	1	Frederick Laying Mash.....	1
Wirthmore Rabbit Pellets.....	1	Gambrill's Chick Starter.....	1
Wirthmore 18 Record Ration.....	1	Gambrill's Growing Mash.....	1
Wirthmore 16 Record Ration.....	1	Gambrill's Laying Mash.....	1
Wirthmore Stock Feed.....	1	Pen Mar 20% Dairy.....	1
		Pen Mar 16% Dairy.....	1
		Pen Mar Horse & Stock Feed.....	1

*See also table of "Brands Not Conforming to Guarantee."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
J. L. Dunnell & Son		S-X Growing Mash.....	1
Excel 18% Dairy Ration.....	2	S-X Starter and Broiler Connecticut	
Excel Fitting Ration.....	2	Formula.....	1
Excel Laying Mash.....	3	Excelsior Milling Co.	
Horse Feed with Molasses.....	2	Camel Wheat Mixed Feed.....	1
Starter & Grower—Horner's.....	3	Farm Bureau Assn.	
Eastern States Farmers' Exchange, Inc.		22% Breeder Mash.....	1
All Mash Breeder.....	1	Chick Starter Mash.....	2
All Mash Developer.....	1	Complete Breeder Mash.....	1
All Mash Producer.....	1	Complete Developer Mash.....	1
Calf Starter.....	1	Complete Market Egg Mash.....	1
Calving Ration.....	1	*Dairy 20%.....	1
Champion.....	1	Dairy 18%.....	1
Developer.....	1	16% Dairy Ration.....	2
Finisher.....	1	Developer Mash.....	1
Fitting Ration.....	2	Fitting Ration.....	1
Fulpaill.....	1	15% Green Pasture Ration.....	1
Milkmore.....	2	High Energy Broiler and Starter Mash	1
Pig Primer.....	1	Horse Feed.....	1
Pork Builder.....	1	Market Egg Mash.....	2
Producer.....	2	Maternity Ration.....	1
32% Supplement.....	1	14% Milking Ration.....	1
Sweepstakes.....	1	Rabbit Food Pellets.....	1
Turkey Grower.....	1	Turkey Grower.....	1
Elmore Milling Co., Inc.		Feed Products, Inc.	
Elmore Bull Feed.....	1	Bestest Brand "Nature Sweet" Dried	
Elmore Calf Grain Ration.....	1	Citrus Pulp.....	1
Elmore Flaked Pelleted Calf Starter	1	Bestest Brand "Nature Sweet" Dried	
Elmore Complete Broiler Ration	1	Citrus Pulp (Late Production)...	1
Pellets.....	1	Flory Milling Co., Inc.	
Elmore Complete Growing Ration..	1	Flory Golden Egg Layer Mash.....	1
Elmore Complete Layer & Breeder..	1	Flory 16% Grower Mash.....	1
Elmore Complete Market Egg Mash	1	Flory Layer Mash.....	1
Elmore Complete Rabbit Ration...	1	Flory Record 16% Dairy Feed.....	1
Elmore Fitting Ration.....	1	Flory Record 14% Fitting Ration...	1
Elmore Fleshing Pellets.....	1	Flory Superior 16% Dairy Feed.....	1
Elmore Grand Champion Ration....	1	Flory Superior 14% Fitting Ration..	1
Elmore Growing Mash.....	1	Fred A. Fountain	
Elmore Horse Feed.....	1	Fountain's Breeder Mash.....	1
Elmore Improved Calf Starter.....	1	Fountain's Growing Mash.....	1
Elmore M.A.C. Laying Mash.....	1	Fountain's Laying Mash.....	1
Elmore Milk Grains "Sixteen".....	1	Fruit Industries	
Elmore Pacemaker 18% Dairy Ration	1	Tropicana Dried Citrus Pulp.....	1
Elmore Poultry Fitting Ration.....	1	General Mills, Inc.	
Elmore Stock Feed.....	1	Washburn's Gold Medal Hard Wheat	
Elmore 30% Supplemental Dairy	1	Bran and Ground Wheat Screen-	
Ration.....	1	ings not exceeding mill run....	1
Elmore Turkey Finisher (Fattener)	1	General Mills, Inc., Farm Service Division	
Elmore Turkey Fitting Ration.....	1	Farm Service 20% Broiler Mash....	1
Elmore Turkey Growing Mash.....	1	Farm Service 20% Chick Starter....	1
John W. Eshelman & Sons		Farm Service Complete Grower Mash	1
Pennsy 16 Dairy Feed.....	1	Farm Service 20% Dairy Feed.....	1
Red Rose Calf Meal.....	1	Farm Service 16% Dairy Feed.....	1
Red Rose Complete Laying Mash...	1	Farm Service 14% Fitting Ration...	2
Red Rose 16 Dairy Feed.....	1	Farm Service Green Rabbit Pellets..	1
Red Rose Fitting Ration.....	1	Farm Service 18% Grower Mash.....	1
Red Rose Growing Mash.....	1	Farm Service 20% Layer Mash.....	1
Red Rose Horse Feed.....	1	Farm Service Special Complete Hog	
Red Rose Laying Mash.....	2	Grower & Fattener.....	2
Red Rose Turkey Grower.....	1	Farm Service Special Complete Sow	
Red Rose Turkey Starter.....	1	& Pig Feed.....	1
Ssex County Co-operative Farming Assn.		Farm Service Turkey Fattener-	
S-X All-Mash Egg.....	1	Finisher Mash.....	1
S-X All-Mash Growing.....	1	Farm Service Turkey Grower Mash	1
S-X Breeder Mash.....	1		
S-X 18% Dairy Ration.....	1		
S-X Egg Mash.....	1		
S-X 14% Fitting Ration.....	1		

See also table of "Brands Not Conforming to Guarantee."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
General Mills, Inc., Larrowe Division		International Milling Co.	
Larro Calf Builder.....	1	Blackhawk Wheat Bran with Ground Wheat Screenings not exceeding 8%.....	1
Larro Chick Builder.....	1	Blackhawk Wheat Standard Middlings with Screenings not exceeding mill run.....	1
Larro 20% Dairy Feed.....	1	Target Wheat Red Dog.....	1
Larro 16% Dairy Feed.....	1	International Stock Food Corp.	
Larro 14% Dairy Feed.....	1	Grow-Em-Milk Equivalent.....	1
Larro Egg Builder Pellets.....	1	Jaquith & Co.	
Larro Egg Mash.....	1	Jaquith Growing Mash.....	1
Larro Sow & Pig Builder.....	1	Jaquith Laying Mash.....	1
Larro Station Fattener Pellets.....	1	Kasco Mills, Inc.	
Larro Surelay.....	1	Kasco All Mash Layer Ration.....	1
Larro Turkey Builder.....	1	Kasco Body Builder.....	1
Glidden Co., Feed Mill Division		Kasco Egg Producer.....	1
Glidden All Mash Grower.....	1	Kasco Growing Mash.....	1
Glidden All Mash Layer.....	1	Kasco Hog Hussler.....	1
Glidden Breeder Mash.....	1	Kellogg Co.	
Glidden Breeder Mash Concentrate.....	1	Kellogg's Hominy Feed.....	1
Glidden Broiler Ration.....	1	Spencer Kellogg & Sons, Inc.	
Glidden Cattle Sweet.....	1	Spencer Kellogg's 32% Protein Old Process (Expeller) Linseed Oil Meal.....	1
Glidden Chick Concentrate.....	1	Kronick's Coal & Grain Co.	
Glidden Growing Mash.....	1	Kronick's 16% Dairy Ration.....	3
Glidden Hi-Flo 16.....	1	Kronick's Egg Mash.....	3
Glidden Laying Mash Concentrate.....	1	Kronick's Starter & Grower.....	1
Glidden Pork Fattener.....	1	Kuder Pulp Sales Co.	
Gloucester By-Products, Inc.		Kuder Dried Citrus Pulp High Sugar.....	1
Globpro Brand Fish Meal.....	1	La Crosse Milling Co.	
D. H. Grandin Milling Co.		Corn Feed Meal.....	1
Grandin's All-Mash Layer.....	1	Lauhoff Grain Co.	
Grandin's 14 Fitting Ration.....	1	Vermilion Hominy Feed.....	1
Grandin's Horse Feed.....	1	Mackenzie & Winslow, Inc.	
Grandin's 20% Milk Maker.....	1	Money's Worth Complete Mash.....	1
Grandin's Pig and Hog Feed.....	1	Money's Worth Dairy Feed 20%.....	1
Grandin's Start to Finish Mash.....	1	Money's Worth Dairy Feed 16%.....	1
Grandin's 18% Test Ration.....	1	Mcney's Worth Growing Mash.....	1
Grandin's 16% Test Ration.....	1	Money's Worth Laying Mash.....	1
Great Atlantic & Pacific Tea Co.		Maple Leaf Milling Co., Ltd.	
Daily-Egg Laying Mash.....	1	Rex Wheat Bran with Screenings not exceeding mill run.....	1
Daily-Growth Growing Mash.....	1	Rex Wheat Middlings with Screenings not exceeding mill run.....	1
Hales & Hunter Co.		Maritime Milling Co., Inc.	
Pioneer Rabbit Feed.....	1	B-B Calf Starter Ration.....	1
Red Comb Broiler Crate Fattener.....	1	Sweetened Bull Brand "18" Dairy Ration.....	1
Red Comb Crate Fattener.....	1	Bull Brand 18% Special Dairy Ration.....	1
Red Comb Turkey Finisher Pellets.....	1	Bull Brand "16" Dairy Ration.....	1
D. Harbeck & Sons		Bull Brand Dry and Fiesh Cow Fitting Ration.....	1
Welcome Dairy Feed.....	1	B-B Egg Mash.....	1
Welcome Growing Mash.....	1	Bull Brand Fitting Ration.....	1
Welcome Starter and Broiler Mash.....	1	B-B Ma-Co Breeder Mash.....	1
Harper Feed Mills, Inc.		B-B Ma-Co Broiler Ration.....	1
Harco Breeder Mash.....	1	B-B Ma-Co Complete Breeder Ration.....	1
Harco Complete Growing Ration.....	1		
Harco Complete Laying Ration.....	1		
Harco 20% Dairy Ration.....	1		
Harco Dairy Fitting Ration.....	1		
Harco Horse Feed.....	1		
Harco Laying Mash.....	2		
Harco Rabbit Feed (Pellets).....	1		
Harco Test Cow Ration.....	1		
H. P. Hood & Sons, Inc.			
Hood's Calf Starter.....	1		
J. William Horsey Corp.			
Dried Citrus Pulp.....	1		

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Maritime Milling Co., Inc. (Cont.)		Ogden Breeder Mash.....	1
B-B Ma-Co Complete Chick Starter Ration.....	1	Ogden Complete Pellets.....	1
B-B Ma-Co Complete Growing Ration.....	1	Ogden Complete Starter Grower Layer Breeder.....	1
B-B Ma-Co Complete Laying Ration.....	1	Ogden 16% Dairy Feed.....	1
B-B Ma-Co Complete Turkey Growing Ration.....	1	Ogden Fitting Ration.....	1
B-B Ma-Co Complete Turkey Starter Ration.....	1	Ogden Growing Mash.....	1
B-B Ma-Co Conditioning Mash.....	1	Ogden Laying Mash.....	1
B-B Ma-Co Egg Mash.....	2	Ogden Milk Ration.....	1
Dollar Maker Egg Mash.....	1	Ogden Rabbit Pellets.....	1
		Ogden Super Pig Ration.....	1
		Ogden Turkey Grower & Developer.....	1
		U-T-K Sweet 18%.....	1
Merrimack Farmers' Exchange, Inc.		Oswego Soy Products Corp.	
Merrimack All-Mash.....	1	Oswego Soy Bean Oil Meal Toasted Extracted.....	1
Merrimack Calf Starter & Growing Ration.....	1		
Merrimack 16% Dairy Ration.....	1	Palm Grain Co.	
Merrimack 16% (Fine) Dairy Ration.....	1	Palm's Complete Mash.....	1
Merrimack 14% Fitting Ration.....	2		
Merrimack Laying Mash.....	1	Park & Pollard Co., Inc.	
Merrimack Super Mash.....	1	Hi-Prime Turkey Grower.....	1
Methuen Grain Co.		Lay or Bust All Mash Grower.....	1
Umpire All-Mash Grower.....	1	Lay or Bust All Mash Layer.....	1
Umpire All-Mash Layer & Breeder.....	1	Lay or Bust Chick Starter.....	1
		Lay or Bust Egg Mash.....	1
Miner-Hillard Milling Co.		Lay or Bust Growing Pellets.....	1
Steam Cooked Hominy Feed.....	1	Lay or Bust Hi-Power Broiler Ration.....	1
		Lay or Bust Laying Pellets.....	1
Minute Maid Corp.		Lay or Bust Poultry Fitting Ration.....	1
Golden Isle Citrus Pulp.....	1	Milk Maid Calf Starter Pellets.....	1
		Milk Maid 20% Dairy Ration.....	1
Montana Flour Mills Co.		Milk Maid 16% Dairy Ration.....	1
Montco Pure Wheat Bran.....	1	Milk Maid Fitting Ration.....	1
		Milk Maid Test Cow Ration.....	1
Geo. Q. Moon & Co., Inc.		Park & Pollard Go-Tu-It Pig & Hog Ration.....	1
Moon Bulky Cow Feed.....	1	Park & Pollard Rabbit Pellets.....	1
Moon Complete Growing Mash.....	1	Red Ribbon 16% Dairy Ration.....	1
Moon Complete Laying Mash.....	1	Yankee Horse Feed.....	1
Moon Dairy Fitting Ration.....	1		
Moon Developing Grains.....	1	George H. Parker Grain Co.	
Moon Fitting Ration.....	1	Parker's Growing Mash.....	1
Moon Growing Mash.....	1	Parker's High A 16% Dairy Feed.....	1
Moon Hog Feed.....	1	Parker's 14% Fitting Ration Coarse.....	1
Moon Horse Feed.....	1		
Moon Laying Mash.....	1	Parrish & Heimbecker, Ltd.	
Moon N. E. Complete Laying Mash.....	1	Parrheim Pure Wheat Shorts.....	1
Moon N. E. 20% Laying Mash.....	1		
Moon Rabbit Pellets.....	1	Pasco Packing Co.	
Moon Special A 20% Dairy Ration.....	1	Sugar-Sweet Citrus Pulp.....	1
Moon Special A 18% Dairy Ration.....	1		
Moon Special A 16% Dairy Ration.....	1	Patent Cereals Co.	
Moon Stock Feed.....	1	Hominy Feed.....	1
Moon 16% Test Ration.....	1		
Moon Turkey Grower Mash.....	1	Pillsbury Mills, Inc.	
as. F. Morse & Co.		Pillsbury's Hard Wheat Bran with Screenings not exceeding mill run.....	1
Morse's 50% Meat & Bone Scraps.....	1	Pillsbury's Hard Wheat Standard B. Middlings with Screenings not exceeding mill run.....	1
Mount Vernon Milling Co.		Pillsbury's XX Daisy.....	1
Poco Hominy Feed.....	1		
Appanee Milling Co.		R. C. Pratt & Co., Ltd.	
Hominy Feed.....	1	Ruler Brand Pure Wheat Shorts.....	1
ational Vitamin Products Co.		Purity Flour Mills, Ltd.	
Calvita Calf Formula.....	1	Pioneer Bran.....	1
Ogden Grain Co.			
Ogden "Biddy" Mash.....	1		

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Quaker Oats Co.		A. E. Staley Manufacturing Co.	
Bell Cow Wheat Bran.....	1	Staley's 44% Protein Solvent Ex- tracted Soybean Oil Meal.....	1
Bell Cow Wheat Shorts.....	1	Staley's 44% Protein Soy-Corn Gluten Mix.....	1
Ful-O-Pep Dairy Feed.....	1	Stratton & Co.	
Ful-O-Pep Flock Ration.....	1	Stratton Wheat Bran, Ground Screen- ings mill run.....	1
Ful-O-Pep Laying Mash.....	1	Stratton Wheat Middlings, Ground Screenings mill run.....	1
Ful-O-Pep Milking Feed.....	1	Stratton White Middlings.....	1
Ful-O-Pep Super Greens.....	1	Suni-Citrus Products Co.	
Ful-O-Pep Turkey Grower.....	1	Sweet Suni-Citrus Pulp.....	1
Quaker Pig-N-Hog Feed.....	1	Taft Bros.	
Ralston Purina Co.		Taft Laying Mash.....	1
Corn & Oat Provender.....	1	Taunton Grain Co.	
Crimped Whole Oats.....	1	Balanced Ration.....	1
Northeastern Special Dairy 18%.....	1	Fitting Ration.....	1
Northeastern Special Dairy 16%.....	1	Laying Mash.....	1
Purina Breeder Layena (Complete Ration) E.....	1	Tioga Mills, Inc.	
Purina Bulky Las.....	1	Ti-O-Ga Broiler Feed.....	1
Purina Chick Growena E.....	1	Trudeau & Freres	
Purina Chick Growing Chow E.....	1	Corn Distillers Dried Grains.....	1
Purina Chick Startena E.....	1	United Cooperative Farmers, Inc.	
Purina Chowder.....	1	UCF All Mash Breeder.....	1
Purina Commercial Lay Chow.....	1	UCF All Mash Grower & Layer.....	1
Purina Commercial Layena.....	1	UCF Breeder.....	1
Purina Complete Sow & Pig Chow E.....	1	UCF Calf Starter.....	1
Purina Cow Chow Concentrate.....	1	UCF Calving Ration.....	1
Purina Cow Chow 18%.....	1	UCF 16% Dairy.....	1
Purina Cow Chow 16%.....	1	UCF Egg Mash.....	1
Purina Cow Chow 14%.....	1	UCF Fitting Ration.....	1
Purina D & F Cow Chow.....	1	UCF Grower.....	1
Purina Flock Chow E.....	1	UCF Horse Feed.....	1
Purina Goat Chow.....	1	UCF Layer.....	1
Purina Hog Fatena E.....	1	UCF Milkmaker.....	1
Purina Lay Chow E.....	1	UCF Pig & Hog Feed.....	1
Purina Layena (Complete Ration) E.....	2	UCF Poultry Fattening Ration.....	1
Purina Omolene.....	1	UCF Starter.....	1
Purina Poultry Booster Checkers E.....	1	UCF Stock Feed.....	1
Purina Rabbit Chow Checkers (Com- plete Ration) E.....	1	UCF 16% Super Dairy.....	1
Purina Turkey Fatena E.....	1	UCF Super Starter.....	1
Purina Turkey Growena E.....	1	UCF Turkey Grower & Fattener.....	1
Purina Turkey Startena E.....	1	Unity Feeds, Inc.	
John Reardon & Sons Division of Wilson & Co., Inc.		Complete Market Egg Mash.....	1
Register Brand Fish Meal.....	3	Conditioning Mash.....	1
Register Brand 47% Protein Meat and Bone Scrap.....	1	16% Dairy Ration.....	1
D. F. Riley		Dairy Fitting Ration.....	1
Riley's 16% Dairy Ration.....	1	Laying Mash.....	1
Riley's 18% Growing Mash.....	1	Pig & Hog Ration.....	1
Riley's 18% Laying Mash.....	2	Stock Feed.....	1
Riley's 18% Starting Mash.....	1	18% Test Ration.....	1
Russell-Miller Milling Co.		Tri-Way Mash.....	1
Hard Wheat Occident Bran.....	1	Turkey & Game Bird Growing Mash.....	1
Hard Wheat Occident Mixed Feed, Ground Wheat Screenings not exceeding mill run.....	2	Turkey & Game Bird Super Ration.....	1
Ryther & Warren Co.		Ventura Grain Co.	
Blue Tag Dairy Ration.....	1	Every-Day Complete Grower & Layer Mash.....	1
Minot Egg Mash.....	2	Every-Day Dairy.....	1
Allen V. Smith, Inc.		Every-Day 20% Dairy.....	1
Smith's Barley Feed.....	1	Every-Day 16% Dairy.....	1
Southern Fruit Distributors, Inc.		Special Every-Day 16% Dairy.....	1
Bluebird Citrus Pulp.....	1	Every-Day 14% Fitting.....	1

Brands Substantially Complying with Guarantees—(Concluded)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Ventura Grain Co. (Cont.)		Blue Seal Fine "16" Dairy Ration..	1
Every-Day Grower Mash.....	1	Blue Seal Egg Mash.....	2
Every-Day Layer-Breeder Mash....	1	Blue Seal Fitting Ration.....	1
Every-Day Starter Mash.....	1	Blue Seal Goat Feed.....	1
Every-Day Starter & Broiler Mash..	1	Blue Seal Horse Feed.....	1
Victory Mills, Ltd.		Blue Seal Pig Feed.....	1
Veeline (Hi-Protein) Soybean Oil Meal	1	Blue Seal Poultry and Turkey Fitting	1
O. B. Vunck & Son		Blue Seal Rabbit Pellets.....	1
Cortland Chick Grower.....	2	Blue Seal Stock Feed.....	1
Cortland Egg Maker.....	2	Blue Seal Succulent Feed and Calving	
Cortland Milk Grains.....	2	Ration.....	1
Cortland Rabbit Pellets.....	1	Blue Seal Super Mash.....	1
Cortland Starter Mash.....	1	Blue Seal Super Starter and Broiler	1
*Cortland Supreme Ration.....	1	Blue Seal Test Ration.....	1
Cortland Supreme Fitting-Growing		Whitmoyer Laboratories, Inc.	
Ration.....	2	Whitmoyer Quality Fish Meal.....	1
C. P. Washburn Co.		Wilson's Corn Products, Inc.	
Made Right Complete Broiler.....	1	Wilson Hominy Feed.....	1
Made Right Complete Layer.....	1	Wirthmore Grain Co.	
Made Right 20% Dairy.....	1	Bliss Dairy Ration.....	1
Made Right 16% Dairy.....	1	Preferred Complete Growing Ration	1
Made Right Fitting.....	1	Preferred Complete Laying Ration	1
Made Right Growing Feed.....	1	Preferred Growing Feed.....	1
Made Right Laying Mash.....	1	Preferred Laying Mash.....	1
Made Right Pig Feed.....	1	Preferred Starter & Broiler Ration..	1
Made Right Stock Feed.....	1	Wood's 16% Dairy Feed.....	1
H. K. Webster Co.		Wood's Stock Feed.....	1
Blue Seal All-Mash Egg Ration....	1	Worcester Grain & Coal Co.	
Blue Seal All Mash Growing Ration	1	F-Ish-N-C Hog Grow.....	2
Blue Seal Breeder's Mash.....	1	Just Right 16% Dairy Feed.....	3
Blue Seal "32" Dairy Concentrate..	1	Just Right Growing Mash.....	2
Blue Seal "20" Dairy Ration Coarse	1	Just Right Laying Mash.....	5
Blue Seal Fine "20" Dairy Ration..	1		
Blue Seal "16" Dairy Ration Coarse	1		

*See also table of "Brands Not Conforming to Guarantee."

BAG CLEANINGS

Since used feed bags are cleaned before undergoing a sterilization process, a considerable amount of feed as bag cleanings is produced at the cleaning plants. The Control Service has analyzed many samples of bag cleanings either for prospective users or sellers of this product.

If the cleanings are from burlap bags, they contain a large amount of burlap fiber which must be screened out before the feed is used. Usually the cleaned feed contains about 14 percent protein, 4 percent fat, 4 percent fiber, and 9 percent ash.

Because of the possibility of disease transmittance, it is strongly recommended that bag cleanings should not be fed to poultry. This possibility exists also, although to a much less extent, in cattle and swine feeding.

Furthermore, bags that had contained ingredients toxic to livestock may be mixed in with feed bags. It is unlikely that each bag is inspected carefully at the bag cleaning plant to make sure that it had contained no toxic material. Generally the dilution factor probably would take care of the inclusion of small amounts of poisonous material, but this may not be true in unusual cases.

Recently the Control Service found 18 parts per million of lead and 5 parts per million of arsenic in a sample of bag cleanings sent in by a farmer. Therefore, the purchaser of bag cleanings should understand the hazards involved in feeding this product, and the seller should realize his responsibility if the product causes death of livestock. Under certain circumstances such cheap feed may prove to be very expensive for both the user and the seller.

Brands Not Conforming to Guarantees

This table includes brands that are one percent or more under guarantee in protein or fat or are one and one-half percent or more over guarantee in fiber.

Manufacturer and Brand	Protein		Fat		Fiber		Ash
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	
Chas. M. Cox Co. *Wirthmore Challenger Coarse 14 Dairy Ration.....	13.8	14.0	2.9	3.0	13.7	12.0	7.0
Crawford Brothers, Inc. Crawford Rabbit Pellets.....	17.3	16.0	-	3.0	13.8	9.0	6.4
Elmore Milling Co., Inc. Elmore Egg Mash.....	17.0	20.0	-	3.0	4.7	7.0	6.2
Elmore Test Ration.....	15.0	18.0	-	3.5	5.9	9.0	4.7
Farm Bureau Assn. *Dairy 20%.....	18.8	20.0	3.5	3.5	7.4	9.0	7.2
D. H. Grandin Milling Co. Grandin's Turkey Starter.....	24.4	26.0	4.1	3.0	4.9	6.0	7.6
D. Harbeck & Sons Welcome Egg Mash.....	18.8	20.0	-	4.0	4.5	7.0	12.6
Jaquith & Co. Jaquith 20% Dairy Ration.....	17.5	20.0	3.9	3.5	7.8	10.0	8.5
Lake of the Woods Milling Co., Ltd. Lakewoods Wheat Shorts.....	14.2	16.0	-	5.0	-	8.0	-
Molson's Brewery, Ltd. Dried Brewers' Grains.....	23.1	22.0	5.1	7.0	14.9	15.0	-
Geo. Q. Moon & Co., Inc. Moon 32% Supplement Ration.....	28.7	32.0	-	3.0	8.6	10.0	8.1
Moon 18% Test Ration.....	16.9	18.0	-	4.0	7.7	8.0	8.1
Ogden Grain Co. Ogden Hi-Energy Starter & Broiler.....	19.6	22.0	3.3	3.0	3.7	4.0	7.5
Park & Pollard Co., Inc. Milk Maid Goat Feed.....	14.2	16.0	4.5	3.0	7.4	9.0	7.6
George H. Parker Grain Co. Bill McHugh's Thoroughbred Horse Feed.....	11.9	14.0	3.7	3.5	8.1	10.0	3.8
Parker's Layer-Breeder Mash.....	18.6	20.0	-	3.5	7.3	7.5	9.8
Ralston Purina Co. Purina Beef Chow.....	29.8	32.0	3.2	3.5	6.3	8.0	8.6
John Reardon & Sons Division of Wilson & Co., Inc. Register Brand 45% Protein Meat and Bone Scrap.....	43.6	45.0	12.8	8.0	-	-	36.6
Stratton & Co. Wheat Mixed Feed, Ground Screenings mill run.....	15.7	13.5	4.1	4.0	9.5	8.0	5.8
O. B. Vunck & Son *Cortland Supreme Ration.....	18.3	20.0	-	4.0	8.8	10.0	7.9

*See also table of "Brands Substantially Complying with Guarantees."

Brands Containing Drugs

These brands substantially complied with guarantees of protein, fat and fiber.

Manufacturer and Brand	Sulfaquinoxaline	
	Found	Guaranteed
Allied Mills, Inc.		
Wayne Chick Starter.....	0.0098	0.0125
Wayne Rocket Broiler Feed.....	0.0118	0.0125
Wayne Turkey and Game Bird Starter.....	0.0140	0.0175
Beacon Milling Co., Inc.		
Beacon Complete Starter.....	0.016	0.0175
Beacon S. Q. Control Mash.....	0.081	0.1
Beacon Turkey Starter.....	0.018	0.0175
Berkman Grain Co.		
Nibco Sulfaquinoxaline Mixture.....	0.0133	0.0125
Chas. M. Cox Co.		
Wirthmore Complete Chick Starter.....	0.0138	0.0125
Wirthmore Complete Growing Ration.....	0.0125	0.0125
Wirthmore Improved Hi-Ener-G Starter and Broiler Ration.....	0.0165	0.0175
Wirthmore Poultry Mash Base.....	0.076	0.1
Crawford Brothers, Inc.		
Hi-Energy Starter & Broiler Mash.....	0.018	0.0125
Eastern States Farmers' Exchange, Inc.		
Minuteman.....	0.042	0.05
Elmore Milling Co., Inc.		
Elmore Chixsaver.....	0.010	0.0125
Elmore Complete Broiler Ration.....	0.0123	0.0125
Elmore Turkey Starting Mash.....	0.0118	0.0175
John W. Eshelman & Sons		
Red Rose Chick Starter.....	0.0110	0.0125
Essex County Co-operative Farming Assn.		
S-X All-Mash Grower.....	0.012	0.0125
S-X Starter and Broiler Ration Connecticut Formula.....	0.015	0.0175
Farm Bureau Assn.		
Chick Starter Mash.....	0.0115	0.0125
Chick Starter Mash.....	0.014	0.015
High Energy Broiler and Starter Mash.....	0.017	0.015
General Mills, Inc., Larowe Division		
Larro Chick Builder.....	0.012	0.0125
D. H. Grandin Milling Co.		
Grandin's Super Starter & Broiler Ration.....	0.011	0.0125
Grandin's Turkey Starter.....	0.0125	0.0175
Harper Feed Mills, Inc.		
Harco Special Hi-Energy Broiler Mash.....	0.014	0.0175
Harco Finisher Pellets.....	0.015	0.0175
Jaquith & Co.		
Jaquith Starting Mash.....	0.0170	0.0125
Maritime Milling Co., Inc.		
B-B Ma-Co Broiler Ration.....	0.063	1.1
Geo. Q. Moon & Co., Inc.		
Moon Complete Growing Mash.....	0.0105	0.0125
Moon Starter Mash.....	0.0110	0.0125
Ogden Grain Co.		
Ogden Starter & Broiler.....	0.0090	0.0125
Park & Pollard Co., Inc.		
Hi-Power Broiler Ration.....	0.011	0.0125
Hi-Prime Turkey Grower.....	0.0135	0.0175
Lay or Bust Chick Starter.....	0.0113	0.0125
Lay or Bust Growing Feed.....	0.0140	0.0175
Lay or Bust Hi-Valu Pellets.....	0.018	0.0175

Brands Containing Drugs—Continued

Manufacturer and Brand	Sulfaquinoxaline	
	Found	Guaranteed
Ralston Purina Co. Purina Chick Growena E.	0.014	0.0125
Tioga Mills, Inc. Tioga Broiler Feed.	0.0088	0.0125
United Cooperative Farmers, Inc. UCF Broiler Mash. UCF Broiler Mash. UCF Starter. UCF Starter. UCF Super Starter. UCF Super Starter.	0.025 0.017 0.013 0.014 0.014 0.014	0.0175 0.0175 0.015 0.015 0.015 0.015
H. K. Webster Co. Blue Seal Super Starter and Broiler. Blue Seal Turkey Starter.	0.019 0.020	0.0175 0.0175
Chas. M. Cox Co. Wirthmore Plus 2M Broiler Feed.	0.022	0.02
Eastern States Farmers' Exchange, Inc. All-Mash Developer—WN. Pacemaker. Pacemaker.	0.015 0.017 0.015	0.01875 0.01875 0.01875
Fred A. Fountain Improved High Energy Starter-Broiler Ration.	0.017	0.01875
Kasco Mills, Inc. Kasco Broiler-Starter Ration. Kasco Broiler-Starter Ration.	0.017 0.017	0.022 0.022
Unity Feeds, Inc. Advance Ration. Advance Ration. Super Ration. Super-Gro Ration.	0.012 0.012 0.015 0.015	0.015 0.015 0.015 0.015
H. K. Webster Co. Blue Seal Chick Starter. Blue Seal Chick Starter.	0.019 0.018	0.0125 0.025
3-Nitro-4-Hydroxy-phenylarsonic Acid		
	Found	Guaranteed
Ralston Purina Co. Purina Broiler Chow E. Purina Broiler Chow Finisher E. Purina Broiler Chow Starter E. Purina Chick Startena E.	0.0056 0.0059 0.0041 0.0042	0.005 0.005 0.005 0.005
Nitrosal		
	Found	Guaranteed
Beacon Milling Co., Inc. Beacon Broiler Feed. Beacon Complete Starter. Beacon Finisher Pellets.	0.032 0.035 0.0352	0.039 0.039 0.039
General Mills, Inc., Farm Service Division Farm Service 20% Broiler Mash.	0.0342	0.039

Brands Containing Drugs — (Concluded)

Manufacturer and Brand	3-Nitro-4-Hydroxy-phenylarsonic Acid		Sulfaquinoxaline	
	Found	Guar-anteed	Found	Guar-anteed
Allied Mills, Inc. Wayne Chick Starter.....	0.0048	0.005	0.011	0.0125
John W. Eshelman & Sons Red Rose Hi-Lo Broiler Ration.....	0.0056	0.005	0.011	0.0125
	Nitrophenide		Arsanilic Acid	
	Found	Guar-anteed	Found	Guar-anteed
Maritime Milling Co., Inc. B-B Ma-Co Broiler Ration.....	0.011	0.0187	0.010	0.01
Unity Feeds, Inc. Super Ration.....	0.013	0.0187	0.012	0.0095
			Enheptin	
			Found	Guar-anteed
Beacon Milling Co., Inc. Beacon Special Turkey Grower.....			0.083	0.1
Elmore Milling Co., Inc. Elmore Turkey Growing Mash.....			0.0275	0.1
	3-Nitro-4-Hydroxy-phenylarsonic Acid		Nitrophenide	
	Found	Guar-anteed	Found	Guar-anteed
Harper Feed Mills, Inc. Harco Complete Starter Broiler.....	0.0048	0.005	0.019	0.0125
Harco Complete Starter Broiler.....	0.0052	0.005	0.0086	0.0125
Harco Special Hi-Energy Broiler Mash.....	0.0045	0.005	0.009	0.0125

Dry Dog Foods

Manufacturer and Brand	Protein		Fat		Fiber		Ash
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	
Ajax Dog Food Co.							
Ajax Kibbled Biscuits.....	20.4	20	2.1	1.5	1.5	3	4.9
Albers Milling Co.							
Friskie's Dog Meal.....	28.8	24	5.7	5	2.9	4	11.9
Allied Mills, Inc.							
Wayne Dog Food Blox.....	24.2	25	6.5	7	2.9	5	9.8
Wayne Dog Food Krums.....	26.5	25	7.3	7	3.0	5	9.1
Animal Foundation, Inc.							
Hunt Club Dog Meal.....	24.6	23	5.4	5	2.6	4	8.7
Hunt Club Dog Meal Full Diet.....	*23.6	25	4.7	5	2.6	4	7.5
Arcady Farms Milling Co.							
Arcady Dog Ration Meal.....	26.1	26	5.8	5	3.9	5.5	6.6
Barber & Bennett, Inc.							
Fort Orange Dog Food.....	25.9	25	5.7	5	5.0	5	12.2
Battle Creek Dog Food Co.							
Miller's Kibbles.....	24.7	22	2.4	2	1.8	3	9.1
Borden Co., Special Products Div.							
Borden's Dog Food.....	28.6	25	7.2	5.5	4.1	5	10.8
Pet-Pro Supplement for Dog Food.....	33.7	25	8.8	6	3.8	7.5	10.0
	34.2	25	-	6	4.2	7.5	9.9
Chas. M. Cox Co.							
Wirthmore Dog Food.....	25.1	25	8.3	7	3.5	5	12.2
Wirthmore Medium Kibbled Dog Biscuit	25.1	22	2.4	2	2.5	3	6.1
John C. Dow Co.							
Dow's Dog Biscuits.....	20.4	21	3.1	3	0.9	2	7.1
Dow's New Improved Crumpled Meal...	25.0	24	3.9	4	1.9	3.5	12.7
Dow's New Improved Crunchy.....	21.1	21	4.1	2.5	1.4	2	7.8
Drackett Co.							
Super Charge Dog Candy.....	13.0	9	10.5	9	1.1	2	4.0
	10.0	9	10.3	9	0.9	2	4.2
Eastern States Farmers' Exchange, Inc.							
Dog Food Pellets.....	26.0	24	6.8	5.5	3.5	4	8.5
Elmore Milling Co., Inc.							
Elmore Completely Balanced Dog Food..	24.4	22	4.9	3	4.2	3	12.0
Nicholas Gangone							
Nick's Dog Food.....	25.6	24	5.1	4.5	2.9	4	11.3
General Foods Corp.							
Gaines Dog Meal.....	25.3	25	6.4	6	4.0	5	8.9
	26.0	25	8.0	6	4.9	5	8.5
Gaines Krunchon Cubes.....	25.9	25	6.1	6	1.9	5	9.4
General Mills, Inc., Larowe Div.							
Larro Dog Food Meal.....	24.2	24.5	4.5	4.5	4.6	6	8.8
Glidden Co., Feed Mill Div.							
Best Friend Dog Ration.....	28.7	25	6.5	4.5	3.2	4.5	7.2
Great Atlantic & Pacific Tea Co.							
Daily Dog Meal.....	24.3	23	4.1	3.5	2.6	4.5	7.6
	25.6	23	5.2	3.5	3.9	4.5	9.4
Daily Dog Food Kibbled Biscuit.....	25.7	22	3.6	3	1.5	3.5	4.2
Hartz Mountain Products							
Dog-Yummies.....	32.8	26	7.7	3	2.9	6	12.7
	31.6	26	7.0	3	3.1	6	12.4
Kasco Mills, Inc.							
Kasco Complete Dog Food Pellets.....	29.2	25	4.8	4	3.3	4	10.6
Kasco Complete Dog Ration.....	26.4	25	8.4	7	2.9	4	10.1
	26.8	25	9.5	7	3.3	4	10.9

*Deficient in protein.

Dry Dog Foods (Concluded)

Manufacturer and Brand	Protein		Fat		Fiber		Ash
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	
Kellogg Co.							
Kellogg's Gro-Pup Dog Food.....	25.1	24	3.3	3.5	4.4	5	6.3
	24.7	24	3.9	3.5	4.0	5	5.9
Kennel Food Supply Co., Inc.							
Cero Meato Brand Dog Food.....	*19.6	21	3.9	2	1.9	3	10.9
	22.2	21	2.4	2	1.7	3	11.2
	22.1	21	2.2	2	1.6	3	12.5
	25.0	21	2.3	2	1.7	3	11.2
Challenger Meal.....	25.9	25	7.0	7	2.8	4	13.8
Libner Grain Co.							
Libner's Dog Food.....	*26.1	28	4.3	4	2.8	3	11.8
Libner's Dog Food.....	28.2	25	6.9	4	2.4	3	16.1
	26.4	25	5.1	4	2.7	3	14.0
Geo. Q. Moon & Co., Inc.							
Moon's Dog Food.....	24.3	26	4.6	4	4.0	4	10.8
John Morrell Co.							
Red Heart Dog Food.....	28.8	25	3.0	2	1.1	3	8.8
Red Heart Kibbled Dog Food.....	28.4	25	3.5	2	1.3	3	10.1
National Biscuit Co.							
Milk Bone Dog Biscuit.....	24.0	21	2.6	2	2.0	2.5	6.0
Milk Bone Tiny Bits.....	23.0	21	2.6	1.5	1.8	2.5	5.5
Pal Dog Biscuit.....	22.2	18.5	1.8	1	2.0	2.5	5.8
	22.0	18.5	1.5	1.5	2.1	2.5	4.8
Old Mother Hubbard Dog Food Co., Inc.							
Old Mother Hubbard Three Formula.....	22.5	20	2.3	2	1.5	3	8.6
Kibbled Dog Biscuits.....	21.2	20	2.2	2	2.0	3	8.1
Old Trusty Dog Food Co., Inc.							
Old Trusty Flavor Baked Biscuit Bones.....	24.9	22	3.1	2	1.8	3	6.7
	25.5	22	2.6	2	2.1	3	8.0
Old Trusty Kibbled Dog Food.....	23.2	23	2.2	2.5	2.0	2	6.3
Old Trusty Kibbled Dog Food.....	23.4	22	2.1	2	2.0	3	7.4
Park & Pollard Co., Inc.							
Muncy Dog Food.....	27.5	26	5.0	6	3.1	4.5	11.0
Quaker Oats Co.							
Ken-L-Biskit.....	23.7	23	4.1	4	1.8	3	5.5
Ken-L-Meal.....	24.4	23	4.4	4	3.5	4.5	7.5
	23.5	23	5.2	4	2.3	4.5	7.5
Ralston Purina Co.							
Purina Dog Chow Checkers.....	28.1	24	6.1	5	4.3	5	8.9
Purina Dog Kibbled Meal.....	25.8	24	7.5	5	4.6	5	9.9
Purina Dog Kibbles.....	26.6	25	2.5	2.5	2.1	4	7.3
Spratt's Patent (America) Ltd.							
Spratt's Assorted Dog Biscuits.....	20.9	20.4	3.2	2	1.8	2.4	2.9
	21.9	21	3.1	3	1.5	1	2.0
Spratt's Charcoal Ovals.....	*18.3	20	2.6	2	4.0	7.5	2.7
Sunshine Biscuits, Inc.							
Austin's Dog Food.....	25.5	22	2.6	2.5	3.5	4.5	6.6
	24.0	22	3.2	2.5	3.5	4.5	6.4
Swift & Co.							
Swift's Pard Meal.....	26.5	26	10.7	7.5	4.2	6	9.7
Vitality Mills, Inc.							
Vitality Brand Body Builder Dog Food...	27.5	26	6.5	5	4.2	5.5	7.5
Vitality Brand Kibbled Biscuits.....	19.7	20	1.7	1.75	1.9	3	4.8
O. B. Vunck & Son							
Vunck's Balanced Dog Food.....	26.3	25	7.4	7	2.7	4	12.5
Vunck's Grow-Rite Dog Food.....	25.2	25	8.3	7	3.3	4	14.0
	27.8	25	7.5	7	3.4	4	14.3

*Deficient in protein.

VITAMIN A IN MIXED FEEDS

It is taken for granted that all mixed feed manufacturers use formulas that provide for adequate amounts of vitamin A in their feeds. Therefore, unless a manufacturer unknowingly is using vitamin A oils, dry vitamin A supplements or alfalfa meals that are seriously below the expected potencies in vitamin A, it may be presumed his feeds contain somewhat over the recommended levels of vitamin A when manufactured.

Unfortunately, so far as the ultimate consumers—the cattle, swine, poultry and dogs—are concerned, the words “when manufactured” sometimes may mean very little. Our inspector has found poultry feeds still in the dealer’s warehouse four, six, and eight or more months after manufacture.

When informed that a sample of his dog food was found almost devoid of vitamin A, one manufacturer replied that the dog food in question had been shipped to the dealer about two years previously and had contained more than the guaranteed amount of vitamin A when shipped. This information was of little value to the dogs that ate the food.

Such instances are not usual, but they occur much more frequently than they should under good merchandising practice for products of this kind. It is the feed manufacturer’s responsibility to exercise enough control over the movement of his goods so that they will not get sidetracked anywhere along the way from the plant to the consumer. The length of time the feed is in the dealer’s warehouse should not be great enough to cause serious loss of any of the essential nutritional factors.

So far as vitamin A is concerned, the pertinent question is “How much does the feed contain when fed?” In an effort to answer this question, at least partially, the Control Service analyzed a number of poultry and dog feeds for the content of this vitamin. Since these samples were taken from dealers’ stocks it is probable that in some cases there was still a considerable period of time between the date the samples were taken and the date the feed was actually fed to poultry or dogs. Consequently, it may be assumed that further loss of vitamin A occurred. Vitamin A determinations were made only on samples taken after February 1, 1953; therefore, these samples do not represent the products of all manufacturers.

To provide a basis for comparison between the vitamin A values found and those recommended by feed nutritionists, the following data taken from the New England College Conference Formulas and from the National Research Council recommendations are presented.

*Recommended Levels of Vitamin A. U.S.P. Units per Pound.

	Starter & Broiler	Grower	Layer	Breeder
N. E. College Conference	4,300	4,470	5,300	5,330
National Research Council	2,000	2,000	3,300	3,300

*Total Ration Basis.

The New England College Conference recommendations are specifically for the high efficiency feeds with a high carbohydrate and low fiber content. The recommended levels are those in the formulas revised January 1953.

For dogs it is generally conceded that 2,000 U.S.P. units of vitamin A per pound furnish an adequate amount.

Vitamin A is one of the least stable vitamins. The problem of providing amounts of this vitamin that will be nutritionally sufficient in a mixed feed when fed has been a serious one. Recent developments in the coating of vitamin A particles with such materials as microcrystalline wax, pectin, and gelatin indicate that a solution of the problem may be at hand. This does not mean that feeds may now be stored indefinitely without loss of vitamin A and other factors that are impaired by long periods of storage.

It is realized that chemical, microbiological, and other laboratory tests on feeds, at present, can tell only a partial story about the nutritive value of a feed. For this reason most large feed manufacturers maintain research farms where their feeds are tested by actual feeding trials. Probably most of these experiments are made with fresh feed.

It is difficult, if not impossible, for most manufacturers to maintain the rigid control necessary to insure that their products will always be fresh when delivered to the farmer. Therefore, it might be well for all manufacturers periodically to recall sample lots of their feed from dealers for feeding trials on the research farms. The sample lots could represent monthly intervals after manufacture up to the maximum number of months that any particular manufacturer's feeds are found still in the dealer's hands. The feeding tests would show what factors should be either added in greater quantity or better safeguarded in mixtures so that their potency will still be fully effective after the maximum storage periods.

Vitamin A in Mixed Feeds

Manufacturer and Brand	U.S.P. Units Vitamin A per Pound (Includes Vitamin A Equivalent from Carotene)	Manufacturer and Brand	U.S.P. Units Vitamin A per Pound (Includes Vitamin A Equivalent from Carotene)
Allied Mills, Inc.		F. Diehl & Son, Inc.	
Wayne Egg Mash.....	2,340	Grower.....	2,820
Wayne Universal Egg "E".....	2,440		
Arcady Farms Milling Co.		Dietrich & Gambrill, Inc.	
Rockland Mouse Diet.....	2,100	D & G Pig & Sow Meal...	2,000
Rockland Rat Diet Complete	2,370	D & G Special Broiler Mash	2,000
		Gambrill's Chick Starter...	1,600
Borden Grain Co.		J. L. Dunnell & Son	
Borden's Laying Mash....	3,070	Excel Laying Mash.....	750
Borden's Super Starter and		Starter & Grower—Horner's	2,820
Broiler Feed.....	3,000		
Courcy & Sons Grain Co.		Eastern States Farmers' Ex- Change, Inc.	
Courcy's Growing Mash...	8,270	Producer.....	8,600
Courcy's Laying Mash....	4,270		
C. A. Cowles, Inc.		John W. Eshelman & Sons	
Blue C Feed Hog and Pig Feed	3,800	Red Rose Laying Mash...	9,810
Blue C Feed Laying Mash	3,800		
Chas. M. Cox Co.		Farm Bureau Assn.	
Wirthmore Complete Chick		Sulfaquinoxaline 0.015% mixed	
Starter.....	8,960	with High Energy Broiler and	
Wirthmore Laying Mash..	9,330	Starter Mash.....	2,000
		Market Egg Mash.....	4,410

Vitamin A in Mixed Feeds—(Concluded)

Manufacturer and Brand	U.S.P. Units Vitamin A per Pound (Includes Vitamin A Equivalent from Carotene)	Manufacturer and Brand	U.S.P. Units Vitamin A per Pound (Includes Vitamin A Equivalent from Carotene)
Fred A. Fountain		Sulfaquinoxaline 0.0175% incorporated in Lay or Bust Hi-Value Pellets.	3,220
Fountain's Breeder Mash...	10,000		
Fountain's Growing Mash.	7,670		
Nitrophenide 0.01875% in- corporated in Fountain's Improved High Energy Starter-Broiler Ration.	6,480	Ralston Purina Co.	
Fountain's Laying Mash..	9,335	Purina Layena (Complete) Ration E.	10,160
General Mills, Inc., Farm Service Division		D. F. Riley	
Farm Service Special Com- plete Hog Grower & Fattener.....	5,600	Riley's 18% Laying Mash. Riley's 18% Starting Mash	5,660 4,780
General Mills, Inc., Larowe Division		Ryther & Warren Co.	
Larro Chick Builder.....	5,690	Minot Egg Mash.....	7,980
Larro Egg Builder Pellets .	6,390	Taunton Grain Co.	
Larro Sow & Pig Builder..	4,890	Laying Mash.....	4,820
Hales & Hunter Co.		Unity Feeds, Inc.	
Pioneer Rabbit Feed.....	18,200	Laying Mash.....	6,180
Harper Feed Mills, Inc.		Ventura Grain Co.	
Harco Laying Mash.....	2,250	Every-Day Complete Grower & Layer Mash.....	4,400
Kronick's Coal & Grain Co.		Every-Day Grower Mash .	3,150
Kronick's Egg Mash.....	3,630	Every-Day Layer-Breeder Mash.....	3,780
Kronick's Starter & Grower	5,200	Every-Day Starter Mash..	2,400
Maritime Milling Co., Inc.		Every-Day Starter & Broiler Mash.....	3,000
B-B Ma-Co Complete Chick Starter Ration.....	3,390	H. K. Webster Co.	
B-B Ma-Co Egg Mash....	2,980	Blue Seal Breeder's Mash .	3,510
Merrimack Farmers' Exchange, Inc.		Nitrophenide 0.025% Mix- ture Blue Seal Chick Starter.....	9,230
Merrimack Laying Mash..	2,400	Blue Seal Egg Mash.....	10,100
Merrimack Super Mash...	1,800	Sulfaquinoxaline 0.0175% Mixture Blue Seal Starter and Broiler...	2,890
Methuen Grain Co.		Sulfaquinoxaline 0.0175% Mixture Blue Seal Tur- key Starter.....	2,800
Umpire All-Mash Grower .	2,200	Wirthmore Grain Co.	
Umpire All-Mash Layer & Breeder.....	2,800	Preferred Complete Growing Ration.....	5,200
Ogden Grain Co.		Preferred Complete Laying Ration.....	6,500
Ogden Complete Starter Grower Layer Breeder.....	4,600	Preferred Growing Feed....	10,340
Palm Grain Co.		Preferred Laying Mash....	10,270
Palm's Complete Mash....	2,800	Preferred Starter & Broiler Ration.....	9,610
Park & Pollard Co., Inc.		Worcester Grain & Coal Co.	
Sulfaquinoxaline 0.0175% incorporated in Lay or Bust Growing Feed...	4,690	Just Right Laying Mash..	2,400
		Just Right Laying Mash..	2,680

Vitamin A in Dry Dog Foods

Manufacturer and Brand	U.S.P. Units Vitamin A per Pound (Includes Vitamin A Equivalent from Carotene)	Manufacturer and Brand	U.S.P. Units Vitamin A per Pound (Includes Vitamin A Equivalent from Carotene)
Ajax Dog Food Co. Ajax Kibbled Biscuits.....	490	Geo. Q. Moon & Co., Inc. Moon's Dog Food.....	5,490
Animal Foundation, Inc. Hunt Club Dog Meal.....	1,910	John Morrell Co. Red Heart Dog Food.....	2,450
Borden Co., Special Products Division Pet-Pro Supplement for Dog Food..... Pet-Pro Supplement for Dog Food.....	68,100 88,643	National Biscuit Co. Milk Bone Dog Biscuit.... Pal Dog Biscuit.....	1,430 2,290
Drackett Products Co. Super Charge.....	1,360	Old Mother Hubbard Dog Food Co., Inc. Old Mother Hubbard Three Formula Kibbled Dog Biscuits.....	2,780
General Foods Corp., Gaines Division Gaines Dog Meal..... Gaines Krunchon Cubes...	1,760 1,650	Old Trusty Dog Food Co., Inc. Old Trusty Flavor-Baked Biscuit Bones..... Old Trusty Kibbled Dog Food	2,720 2,180
Great Atlantic & Pacific Tea Co. Daily Dog Meal..... Daily Dog Food Kibbled Biscuit.....	1,040 6,340	Quaker Oats Co. Ken-L-Meal.....	3,360
Hartz Mountain Products Dog-Yummies.....	1,360	Ralston Purina Co. Purina Dog Chow Checkers Purina Dog Kibbles.....	4,160 5,310
Kasco Mills, Inc. Kasco Complete Dog Ration	850	Spratt's Patent (America) Ltd. Spratt's Assorted Dog Biscuits	1,910
Kellogg Co. Kellogg's Gro-Pup Dog Food	8,080	Sunshine Biscuits, Inc. Austin Dog Food.....	970
Kennel Food Supply Co., Inc. Cero Meato Brand Dog Food Challenger Meal.....	1,380 3,870	Swift & Co. Swift's Pard Meal.....	2,440
Libner Grain Co. Libner's Dog Food.....	3,120	O. B. Vunck & Son Vunck's Balanced Dog Food	1,530

FEEDING OILS, FEED SUPPLEMENTS, AND VITAMIN MIXTURES

Unlike the mixed feed manufacturers, who generally have considerable control over the handling of their products by dealers, the manufacturers of feeding oils and dry vitamin supplements usually relinquish all control over their products once they are delivered to the mixed feed manufacturer. It has been found that in some instances feeding oils were still being used more than two years after delivery. Obviously, the manufacturer, under such circumstances, cannot be held responsible if the oil is found to be below the guaranteed vitamin potency.

Recognizing this fact, the Control Service is publishing the date of delivery and the date of sampling for all vitamin feeding oils and dry vitamin concentrates. Also, although the Control Service inspector made every effort to make sure that the sample taken was the one described by the label on the container, it is possible that in some cases the original container may have been refilled with another lot of oil. Seeking to determine the vitamin A potency of the oil actually being used at the time of sampling, the Control Service had no alternative but to sample opened containers. At some small plants the opened container was the only one available for sampling.

The samples of dry concentrates were taken from either previously unopened packages or from those just opened for use in mixing operations.

The reader should bear in mind that most of the dry vitamin concentrates also carry guarantees of vitamins other than those reported in the table. More emphasis has been placed on the determination of vitamin A because this vitamin and riboflavin, to a lesser extent, are more easily destroyed under the usual storage conditions than are the other vitamins. In some cases the cost of the guaranteed vitamin A content represents only a fraction of the total cost of the product analyzed.

Fish Liver Oils

L. R. Parkinson, in charge of the Laboratory, cooperated with the Feed Control Service in the chick assay of the vitamin D fish liver oils.

Manufacturer and Brand	Date Delivered	Date Sampled	Vitamin A U.S.P. Units per Gram	Vitamin D
			Found	Guarantee Sustained
Jawe's Manufacturing Co. Alaska Brand 1500 A & 300 D Feeding Oil..	12/1951	12/10/52	1,504	Yes
Deep Sea Products, Inc. Vitamin D Oil, 85 D.....	9/1/52	10/23/52	—	No
E. F. Drew, Inc. Vitamin A Oil, 8000 A.....	8/6/52	12/11/52	8,415	—
Water Dispersible 6000 A & 1200 D Feeding Oil.....	12/15/52	2/3/53	6,100	Not determined
L. I. du Pont de Nemours & Co. Delsterol 1500 D.....	—	10 23/52	—	Yes
Morton-Pew Fisheries Co., Ltd. Gorton's 750 A & 300 D Feeding Oil.....	8/22/52	12/9/52	760	Not determined
3000 A & 1200 D Feeding Oil.....	12/10/52	2/11/53	2,910	Not determined
Marden-Wild Corp. Cod Liver Oil 1500 A, 300 D.....	3/1/51	10/9/52	1,310	Yes
Cod Liver Oil 1500 A, 300 D.....	8/1952	11/18/52	1,500	Yes
Marden's Poultry Feeding Cod Liver Oil 1300 A, 300 D.....	3/30/51	12/9/52	1,250	Yes
Marden's Poultry Feeding Cod Liver Oil 1500 A, 300 D.....	7/1951	12/29/52	1,500	Not determined
Marden's 1500 A & 300 D Feeding Oil.....	11/20/52	12 11 52	1,500	Not determined
Marden's 1500 A & 300 D Feeding Oil.....	10/20/52	12/10/52	1,430	Not determined
Marden's 750 A & 300 D Feeding Oil.....	8/4/52	12/11/52	770	Not determined
Marden's Poultry Feeding Cod Liver Oil 1500 A, 300 D.....	11/28/52	12/23/52	1,380	Not determined
Marine Products Co. Cod Liver Oil 2000 A, 400 D.....	1948	12/10/52	1,260	Yes
Silmo Chemical Corp. Silmo Vitamin Oil 1500 A, 300 D.....	12/10/52	1/8/53	1,306	Not determined
Cod Liver Oil 1500 A, 300 D.....	10/1951	11/18/52	1,370	Yes
Staron Chemical Manufacturing Co. Fortified Cod Liver Oil 2250 A, 400 D.....	8/15/50	2/6/53	2,100	Not determined
Whitmoyer Laboratories, Inc. Whitmoyer Cod Liver Oil Concentrate, 2250 A, 300 D.....	11/1952	11/19/52	1,900	Not determined
Whitmoyer Quality Cod Liver Oil Concentrate 1500 A, 300 D.....	12/1951	12/10/52	1,150	Yes
Whitmoyer Quality 1500 A & 300 D Feeding Oil.....	8/1952	12/10/52	1,500	Not determined
Whitmoyer Quality 1500 A & 300 D Feeding Oil.....	5/13/52	12/12/52	1,500	Not determined
Whitmoyer Quality 1500 A & 300 D Feeding Oil.....	11/25/52	12/9/52	1,600	Not determined
Whitmoyer Quality Cod Liver Oil 1500 A, 300 D.....	12/1952	12/12/52	1,370	Not determined
Whitmoyer Cod Liver Oil Concentrate 1500 A, 300 D.....	—	2/4 53	1,670	Not determined

Feed Supplements and Vitamin Mixtures

Manufacturer and Brand	Date Delivered	Date Sampled	U.S.P. Units Vitamin A per Pound (Includes Vitamin A Equivalent from Carotene)		Riboflavin Milligrams per Pound	
			Found	Guar- anteed	Found	Guar- anteed
Borden Co., Special Products Div.						
Bospro Vitamin A and D Supplement.....	-	2/5/53	169,450	150,000	-	-
Playdry Poultry Feed Supplement.....	12/6/52	2/2/53	-	-	34.0	27.2
*MF-FL Blend 30 D.....	12/2/52	12/11/52	-	-	23.9	22.2
*MF-FL Blend 30 D.....	12/2/52	2/3/53	-	-	23.3	22.2
*Ration-ayd for Broilers and Turkeys.....	-	2/4/53	-	-	32.7	25.0
*Ration-ayd for Poultry Mash.....	-	2/5/53	-	-	51.6	45.6
Vampros Accessory Feed for Poultry.....	12/2/52	2/3/53	10,900	10,000	-	-
Commercial Solvents Corp.						
BY-21 Dried Grain and Skimmed Milk Fermentation Solubles.....	-	10/9/52	-	-	3,830	3,630
BY-21 Dried Grain and Skimmed Milk Fermentation Solubles.....	11/5/52	3/6/53	-	-	4,340	3,630
BY-500 Dried Corn Fermentation Solubles.....	-	10/23/52	-	-	270.6	227
BY-500 Dried Corn Fermentation Solubles.....	11/14/52	12/10/52	-	-	266.0	227
BY-500 Dried Corn Fermentation Solubles.....	11/26/52	12/19/52	-	-	278	227
BY-500 Dried Corn Fermentation Solubles.....	10/13/52	2/11/53	-	-	256	227
Dawe's Laboratories, Inc.						
555 Broiler Base.....	11/19/52	12/3/52	10,900	-	60.8	-
*Flavonne Ribo-D.....	2/27/52	8/6/52	-	-	22.6	22.2
*Flavonne Ribo-D Ruminant Type.....	2/27/52	8/6/52	-	-	18.5	13.3
Swine Base.....	7/11/52	12/9/52	14,540	-	104	-
Swine Base.....	3/23/53	4/8/53	26,590	-	-	-
*Vitamelnk Base.....	6/30/52	7/22/52	-	-	31.8	31.8
*Vitamelnk Base.....	9/24/52	9/25/52	-	-	35.7	31.8
*Vitamelnk Base.....	7/11/52	10/22/52	-	-	38.9	31.8
Vitamelnk Base.....	11/14/52	6/3/53	none	14,500	-	-
Vitamelnk Base Green Tag.....	3/15/53	3/24/53	13,620	14,500	36.3	31.8
Vitamelnk Base Green Tag.....	6/2/53	6/4/53	16,920	14,500	-	-
Vitamelnk Base Red Tag.....	3/15/53	3/24/53	25,080	29,000	35.6	31.8
Vitamelnk Base Red Tag.....	5/6/53	6/4/53	32,600	29,000	-	-
*Vitamelnk Base (D.V. Base).....	9/1/52	9/10/52	-	-	34.2	31.8
*Vitamelnk Base (D.V. Base).....	11/25/52	12/3/52	1,860	14,500	34.2	31.8
*Vitamelnk Base (D.V. Base).....	11/1/52	12/10/52	16,940	14,500	38.0	31.8
*Vitamelnk Base (D.V. Base).....	10/20/52	12/9/52	9,990	14,500	46.8	31.8
*Vitamelnk Base (D.V. Base).....	11/3/52	12/10/52	16,050	14,500	41.2	31.8
*Vitamelnk Base (D.V. Base).....	12/1/52	12/9/52	2,220	14,500	36.3	31.8
*Vitamelnk Base (D.V. Base).....	4/4/52	12/11/52	11,820	14,500	34.8	31.8
*Vitamelnk Base (D.V. Base).....	12/5/52	12/11/52	1,090	14,500	36.9	31.8
*Vitamelnk Base (D.V. Base).....	12/5/52	12/12/52	8,060	14,500	40.7	31.8
Vitamelnk Base (D.V. Base).....	4/8/53	4/16/53	29,690	14,500	-	-
Vitamelnk Base (D.V. Base).....	5/9/53	6/4/53	16,320	14,500	-	-
*Vitamelnk Base Ruminant Type.....	-	7/25/52	-	-	17.7	15.6
*Vitamelnk Base Ruminant Type.....	9/1/52	9/10/52	-	-	19.7	15.6
*Vitamelnk Base Ruminant Type.....	11/25/52	12/3/52	7,790	29,000	13.9	15.6
*Vitamelnk Base Ruminant Type.....	7/11/52	12/9/52	8,170	29,000	18.5	15.6
*Vitamelnk Base Ruminant Type.....	10/27/52	12/11/52	9,040	29,000	15.4	15.6
*Vitamelnk Base Ruminant Type.....	11/1/52	12/10/52	5,940	29,000	18.6	15.6
*Vitamelnk Base Ruminant Type.....	10/22/52	12/12/52	7,245	29,000	18.7	15.6
Vitamelnk Base Ruminant Type.....	3/23/53	4/8/53	31,780	29,000	-	-
Vitamelnk Base Ruminant Type.....	3/19/53	4/16/53	29,560	29,000	-	-
Vitamelnk Base Ruminant Type.....	5/6/53	6/4/53	31,000	29,000	-	-
Vitamelnk Base Ruminant Type.....	5/9/53	6/4/53	37,100	29,000	-	-
Vitamelnk Base Ruminant Type.....	4/29/53	6/4/53	27,240	29,000	-	-
Deep Sea Products, Inc.						
Nutrisol.....	9/2/52	12/10/52	-	-	40.0	40.0
Gorton-Pew Fisheries Co., Ltd.						
Al-Blend "Junior".....	-	5/28/52	-	-	21.9	18.2
Al-Blend "Junior".....	9/2/52	9/9/52	69,900	45,000	20.2	18.2
Al-Blend "Junior".....	8/19/52	12/9/52	67,550	45,000	18.2	18.2
Al-Blend "Junior".....	11/19/52	12/9/52	64,710	45,000	18.1	18.2
Al-Blend "Senior".....	11/20/52	12/12/52	70,200	70,000	20.2	14.4
Al-Blend "Senior".....	1/15/53	2/11/53	78,360	70,000	17.3	14.4

*Choline determined and found above guaranteed amount.

Feed Supplements and Vitamin Mixtures—(Concluded)

Manufacturer and Brand	Date Delivered	Date Sampled	U.S.P. Units Vitamin A per Pound (Includes Vitamin A Equivalent from Carotene)		Riboflavin Milligrams per Pound	
			Found	Guar- anteed	Found	Guar- anteed
Mois Yeast Co. East Glow Cultured Yeast.....	11/10/52	2/11/53	-	-	44.8	45.4
Merle Laboratories Div., American Cyanamid Co. Fortafeed Brand Feed Supplement 2-22 C	12/1/52	12/11/52	-	-	2,328	2,000
Fortafeed Brand Feed Supplement 2-49 C	12/1/52	10/23/52	-	-	2,250	2,000
Fortafeed Brand Feed Supplement 2-49-90	9/25/52	12/10/52	-	-	2,220	2,000
Orck & Co., Inc. No. 70 Riboflavin Mixture.....	-	10/23/52	-	-	4,032	4,000
Midletown Milk & Cream Co., Inc. Dellwood Brand Dried Whey.....	3/1952	11/25/52	-	-	7.9	-
National Distillers Products Corp. Radisol Brand Corn Distillers Dried Solubles.....	-	11/25/52	-	-	8.3	-
Neco Chemical Co. A Nopco Custom Mix.....	11/27/52	12/10/52	2,481,800	2,128,000	878	709
Nix Foods Co. Kraco Dried Whole Whey.....	10/31/52	2/6/53	-	-	25.4	-
Kraco Dried Whole Whey.....	-	2/9/53	-	-	14.3	-
Ph E. Seagram & Sons, Inc. Corn Distillers Dried Solubles.....	-	11/25/52	-	-	5.7	-
Pete Cooperative Agricole St. Germain de Grantham, Canada Roller Process Skim Milk Powders.....	8/19/52	11/18/52	-	-	8.5	-
Ptern Condensing Co. Peebles' Dried Whole Whey with Dried Whey Fermentation Solubles (Ribolac)	-	10/23/52	-	-	32.3	-
Peebles' Dried Whey-Product 58% Lac- tose with Whey Fermentation Solubles (Ribolac).....	-	12/11/52	-	-	27.6	-
Pmoyer Laboratories, Inc. lo-Meal.....	7/22/52	7/23/52	-	-	70.1	70
lo-Meal.....	9/18/52	9/24/52	-	-	74.8	70
lo-Meal.....	11/18/52	12/12/52	-	-	106.2	70
lo-Meal.....	12/8/52	12/9/52	-	-	70.0	70
lo-Meal.....	12/2/52	12/12/52	-	-	72.6	70
lo-Meal.....	2/3/53	2/4/52	-	-	79.6	70
ri-Col 3000 A.....	2/1953	3/25/53	1,407,400	1,362,000	-	-
ri-Col 3000 A.....	3/7/53	6/4/53	1,452,800	1,362,000	-	-
lav-A-Dee.....	7/22/52	7/23/52	-	-	60.0	60
lav-A-dee.....	12/2/52	12/12/52	-	-	74.9	60
lav-A-Dee.....	12/8/52	12/9/52	-	-	61.9	60
lav-A-Dee.....	11/18/52	12/19/52	-	-	67.2	60
lav-A-Dee.....	2/3/53	2/4/53	-	-	64.8	60
ro-Tein.....	7/22/52	7/23/52	-	-	26.6	20
ro-Tein.....	12/2/52	12/2/52	-	-	27.7	20
ro-Tein.....	12/8/52	12/9/52	-	-	32.3	20
ro-Tein.....	2/3/53	2/4/53	-	-	40.8	20

holine determined and found above guaranteed amount.

Alfalfa Meals

Manufacturer and Brand	Protein		Fat		Fiber		Ash	Carotene Milligrams per Pound	U.S.P. Units Vitamin A per Pound (Vitamin A Equivalent from Carotene)
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed			
Barlon Mills, Inc. Alfalfa Meal.....	17.0	17	*	1.5	28.3	27	10.2	5.4	9,000
Bremco Mills, Inc. Med-O-Green Alfalfa Meal.....	16.8	17	*	1.5	21.4	27	8.4	21.2	35,340
A. B. Caple Co. Capex Dehydrated Alfalfa Meal.....	18.5	17	*	2	24.5	27	8.3	51.7	86,180
Central Mills, Inc. Cent-O-Green Dehydrated Alfalfa Meal.....	17.6	17	*	1.5	26.7	27	9.7	39.0	65,010
Dawson County Feed Products, Inc. Square Fare 17% Dehydrated Alfalfa Meal.....	19.1	17	*	1.5	21.2	27	11.4	37.6	62,680
Eric Alfalfa Mills, Inc. Leafy Eric Brand Dehydrated Alfalfa Meal.....	16.3	17	*	1.75	25.8	27	7.2	43.8	73,010
Keystone Dehydrators Keystone Super Green Alfalfa Meal..... Keystone Super Green Dehydrated Alfalfa Meal.....	17.2 19.1	17 17	* *	2 2	25.7 21.3	25 27	7.6 11.6	41.7 41.7	69,510 69,510
MHR Alfalfa Co., Inc. Dehydrated Alfalfa Meal 17.....	13.9 ^a 17.5	17 17	* *	1.5 1.5	26.8 26.7	27 27	6.4 7.6	36.7 36.7	61,180 61,180
National Alfalfa Dehydrating & Milling Co. 17% Dehydrated Alfalfa Meal.....	21.6	17	*	1.5	19.3	27	10.7	67.8	113,020
Platte Valley Products, Inc. 15% Dehydrated Alfalfa Meal.....	16.2	15	*	1.5	30.9	30	10.2	27.2	45,340
Prairie Dehydrating Co. 17% Dehydrated Alfalfa Meal.....	16.6	17	*	1.5	22.2	27	10.1	54.7	91,180

(Continued)

Alfalfa Meals—(Concluded)

Manufacturer and Brand	Protein		Fat		Fiber		Ash	Carotene Milligrams per Pound	U.S.P. Units Vitamin A per Pound (Vitamin A Equivalent from Carotene)
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed			
Rohloff Brothers, Inc. Dehydrated Alfalfa Meal.....	18.1	17	*	1.75	21.7	27	8.1	69.9	116,520
Saunders Mills, Inc. 17% Protein Alfalfa Meal.....	16.6	17	*	1.5	25.4	27	11.6	18.1	30,170
Alfalfa Meal Dehydrated 17.....	18.3	17	*	1.5	25.3	27	9.4	36.7	61,080
Schoenck Farms, Inc. Super-Green Dehydrated Alfalfa Meal.....	18.2	17	*	2	24.2	27	8.5	25.9	43,180
	19.4	17	*	2	26.5	27	9.4	28.6	47,680
	18.4	17	*	2	22.4	27	9.4	33.1	55,180
W. J. Small Co. 17% Dehydrated Alfalfa Meal.....	17.9	17	*	1.75	26.7	27	10.0	37.6	62,680
	17.5	17	*	1.75	26.9	27	11.4	28.1	46,840
	18.0	17	*	1.75	26.9	27	11.9	24.9	41,510
	19.3	17	*	1.75	24.0	27	10.2	66.2	110,355
Waldo Alfalfa Milling Co. Dehydrated Alfalfa Meal.....	17.9	17	*	2.5	20.3	27	12.5	16.3	27,170

*Not determined. a Protein deficient.

Oat Products

Manufacturer and Brand	Protein		Fat		Fiber		Ash	Results of Microscopic Examination
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed		
Doughboy Industries, Inc. New Rich Pulverized White Oats.....	11.0	11	3.5	3	14.4	13	4.5	Sample is ground grain screenings
John W. Eshelman & Sons Red Rose Ground Oats.....	10.9	11.5	4.5	4.5	10.6	12	3.0	As represented
Fruen Milling Co. Crescent Brand Pulverized White Oats....	12.1	11	4.1	4	11.9	13	3.7	Sample is ground grain screenings
W. L. Hogg, Ltd. Bridge Brand Ground Oats.....	11.2	-	5.2	-	9.5	-	2.9	As represented
Bridge Brand Ground Oats.....	11.7	-	4.1	-	11.6	-	3.2	As represented
Bridge Brand Ground Oats.....	11.1	-	4.0	-	10.1	-	2.8	As represented
Ogilvie Flour Mills Co., Ltd. Canadian Crimped White Oats.....	11.3	-	3.4	-	10.6	-	2.7	As represented
James Richardson & Sons, Ltd. Ground Oats.....	10.3	-	-	-	15.1	-	3.3	As represented

Tonics and Mineral Feeds

Manufacturer and Brand	Calcium	Phosphorus	Iodine	Manganese	Copper	Cobalt	Zinc	Salt	Iron	Magnesium	Fluorine
Dr. Hess & Clark, Inc.											
Dr. Hess Poultry Pan-A-Min. G	21.0	3.5	.040	—	—	—	—	10.0	—	—	—
Dr. Hess Poultry Pan-A-Min. F	26.0	4.7	.044	—	—	—	—	19.8	—	—	—
Dr. Hess Poultry Tablets. G	—	—	—	5.6	—	—	—	—	—	—	—
Dr. Hess Poultry Tablets. F	—	—	—	7.7	—	—	—	—	—	—	—
Dr. Hess Stock Tonic. G	15.0	3.0	.040	—	—	—	—	*23.0	—	—	—
Dr. Hess Stock Tonic. F	22.1	4.6	.047	—	—	—	—	17.5	—	—	—
Hoosac Valley Lime Co., Inc.											
Roll. Phos. G	—	18.0	—	—	—	—	—	—	—	—	*50 p.p.m.
Roll. Phos. F	—	18.1	—	—	—	—	—	—	—	—	27 p. p. m.
Limestone Products Corp. of America											
"Lime Crest" Brand Calcite Flour G	33.0	—	—	—	—	—	—	—	—	*2.6	—
"Lime Crest" Brand Calcite Flour F	34.0	—	—	—	—	—	—	—	—	2.2	—
Mico Lime Crest for Farm											
Animals & Poultry. G	33.0	—	.045	.20	.025	.002	—	—	.20	*2.6	—
Animals & Poultry. F	33.0	—	—	.30	.025	.004	—	—	.50	2.0	—
Mico Lime Crest with Cobalt. G	33.0	—	.045	.20	.025	.002	—	—	.20	*2.6	—
Mico Lime Crest with Cobalt. F	33.9	—	—	.30	.029	.004	—	—	.30	2.2	—
Mico Lime Crest without Cobalt											
G	33.0	—	.045	.20	.025	—	—	—	.20	*2.6	—
F	33.9	—	—	.30	.035	—	—	—	.30	2.2	—
Herman Nagel Co.											
Herman Nagel's Formula B. G	18.0	15.0	.100	—	—	—	—	—	—	—	—
Herman Nagel's Formula B. F	25.4	15.2	.118	—	.061	.022	.030	—	—	—	—
Pratt Food Co.											
Pratt's Animal Regulator. G	—	—	—	—	—	—	—	—	—	—	—
Pratt's Animal Regulator. F	25.0	—	.12	3.0	.15	.12	.22	9.3	2.6	—	—

*Minimum Guarantee

(Continued)

Tonics and Mineral Feeds—(Concluded)

Manufacturer and Brand	Calcium	Phosphorus	Iodine	Manganese	Copper	Cobalt	Zinc	Salt	Iron	Magnesium	Fluorine
Pratt Foods Co. (Cont.)											
Pratt's Poultry Regulator.....G F	32.6	—	.0026	.70	.033	.0013	.026	—	1.1	1.6	—
Sea Board Sales Co., Inc.											
Sea-Coil Soft Phosphate with Colloidal Clay.....G F	15.0 17.9	9.0 9.0	—	—	—	—	—	—	—	—	*1.5 1.8
Tennessee Eastman Co.											
Temangan.....G F	—	—	—	24.9 28.1	—	—	—	—	—	—	—
Whitmover Laboratories, Inc.											
Tia-Min.....G F	18.0	—	.11 .13	5.75 —	.19 .19	.05 .05	.07 .06	—	3.7	—	—
Tra-Min.....G F	18.0 21.1	—	.11 .13	5.75 6.20	.19 .21	.05 .05	.07 .07	—	3.7 4.3	—	—
Tria-Min.....G F	18.0 21.1	—	.11 .13	5.75 6.24	.19 .22	.05 .05	.07 .08	—	3.7	—	—
Tra-Min (for Poultry Feeds)....G F	18.0 21.4	—	.11 .15	5.75 6.79	.19 .23	—	.07 .10	—	3.7 4.1	—	—
Tria-Phos.....G F	18.0 23.4	17.0 23.4	.0185 .020	.887 .964	.0075 .0081	.0295 .0330	.010 .015	—	—	—	—

*Maximum guarantee.

Directory of Manufacturers Who Registered Feeds for Sale in Massachusetts in 1953

L. P. Adams Co., 484 Housatonic St., Dalton, Mass.
 Ajax Dog Food Co., 49 Pine St., Dedham, Mass.
 Albers Milling Co., 6130 Avalon Blvd., Los Angeles 3, Cal.
 Allied Mills, Inc., Chicago, Ill.
 American Crystal Sugar Co., Boston Bldg., Denver, Col.
 American Maize-Products Co., 100 East 42nd St., New York 17, N. Y.
 Animal Foundation, Inc., Sherburne, N. Y.
 Arcady Farms Milling Co., 500 West 138th St., Chicago 27, Ill.
 Archer-Daniels-Midland Co., 600 Roanoke Bldg., Minneapolis 2, Minn.
 Ashcraft-Wilkinson Co., 601 Trust Co. of Georgia Bldg., Atlanta 3, Ga.

E. W. Bailey & Co., Montpelier, Vt.
 Bannock Food Co., Inc., E. Biddle St., West Chester, Penn.
 Barber & Bennett, Inc., Albany, N. Y.
 Battle Creek Dog Food Co., 60 E. State St., Battle Creek, Mich.
 Beacon Milling Co., Inc., Cayuga, N. Y.
 Berkman Grain Co., North Franklin, Conn.
 Best Dog Food Co., 447 Timpson Place, Bronx 55, N. Y.
 Best Foods, Inc., 1442 Marine Trust Bldg., Buffalo 3, N. Y.
 Blatchford Calf Meal Co., 2 Madison St., Waukegan, Ill.
 Borden Co., Special Products Division, 350 Madison Ave., New York 17, N. Y.
 Borden Grain Co., 700 West Water St., Taunton, Mass.
 Borden's Soy Processing Co., Division of the Borden Co., Kankakee, Ill.
 Bremco Alfalfa Mills, Inc., New Bremen, Ohio
 Brown-Forman Distillers Corp., 1908 Howard St., Louisville, Ky.
 George B. Brown Corp., Ipswich, Mass.
 Buckeye Cotton Oil Co., Cincinnati 1, Ohio

Cal Cod Process Co., New Hamburg, N. Y.
 Canada Starch Co., Ltd., Sun Life Bldg., Montreal, Que., Canada
 Canadian Vegetable Oil Processing, Ltd., Hamilton, Ont., Canada
 A. B. Caple Co., Toledo 5, Ohio
 Cargill, Inc., 413 South Fifth St., Minneapolis, Minn.
 Caro-Green, Inc., 328 Board of Trade Bldg., Kansas City, Mo.
 Central Soya Co., Inc., 300 Fort Wayne Bldg., Fort Wayne 2, Ind.
 Cerophyl Laboratories, Inc., 2438 Broadway, Kansas City 10, Mo.
 Citrus Feed Co., Lakeland, Florida
 H. E. Clark Co., 419 Main St., Winfield, Kan.
 Clinton Foods, Inc., Clinton, Iowa
 Coatsworth and Cooper, Ltd., 67 Yonge St., Toronto, Ont., Canada
 Commander-Larabee Milling Co., 600 Baker Arcade, Minneapolis, Minn.
 Commercial Solvents Corp., 105 S. 7th St., Terre Haute, Ind.
 Community Service, Inc., Canaan, Conn.
 Connecticut Grains Corp., Colchester, Conn.
 Consolidated Products Co., 119 N. Washington Ave., Danville, Ill.
 Consolidated Rendering Co., 178 Atlantic Ave., Boston 10, Mass.
 Copeland Flour Mills, Ltd., Midland, Ont., Canada
 Corn Products Refining Co., 17 Battery Place, New York 4, N. Y.
 Courcy & Sons Grain Co., Taunton, Mass.
 Cover Grain & Feed Co., 150 Middle St., Lowell, Mass.
 C. A. Cowles, Inc., Summer St., Plantsville, Conn.
 Chas. M. Cox Co., 177 Milk St., Boston 9, Mass.

Dailey Mills, Inc., Olean, N. Y.
 Dairymen's League Co-operative Association, Inc., 100 Park Ave., New York 17, N. Y.
 Dawe's Manufacturing Co., 4800 S. Richmond Ave., Chicago 32, Ill.
 Dawnwood Farms, Smithfield Road, Amenia, N. Y.
 Decatur Milling Co., Inc., 717 North Union St., Decatur, Ill.
 Decatur Soy Products Co., Decatur, Ill.
 Deep Sea Products, Inc., 169 Front St., Portland, Maine
 Delaware Mills, Inc., Deposit, N. Y.
 Delphos Grain & Soya Products Co., 201 S. Jefferson St., Delphos, Ohio
 Derwood Mills, Inc., Derwood, Md.
 Frank Diauto, 87 Warren St., Randolph, Mass.
 F. Diehl & Son, Inc., 180 Linden St., Wellesley 81, Mass.
 Dietrich & Gambrell, Inc., South Carroll St., Frederick, Md.
 John C. Dow Co., 40 Prospect St., Gloucester, Mass.
 Drackett Products Co., 5020 Spring Grove Ave., Cincinnati 32, Ohio
 E. F. Drew & Co., Inc., 416 Division St., Boonton, N. J.
 J. L. Dunnell & Son, Bernardston, Mass.
 E. I. du Pont de Nemours & Co., Wilmington, Del.

Eastern States Farmers' Exchange, Inc., 26 Central St., West Springfield, Mass.
 Elk Valley Alfalfa Mills, a Division of Midland Industries, Inc., Independence, Kan.
 Elmore Milling Co., Inc., Oneonta, N. Y.
 John W. Eshelman & Sons, 244 North Queen St., Lancaster, Penn.
 Essex County Co-operative Farming Association, Topsfield, Mass.
 Excelsior Milling Co., 712 Flour Exchange, Minneapolis, Minn.

Farm Bureau Association, 155 Lexington St., Waltham 54, Mass.
 Farmers Feed Co., 532 East 76th St., New York 21, N. Y.
 Feed Products, Inc., Groveland, Florida
 Ferneau Grain Co., Gibson Bldg., Blanchester, Ohio
 First National Stores, Inc., 5 Middlesex Ave., Somerville, Mass.
 Florida Citrus Cannery Cooperative, Lake Wales, Florida
 Flory Milling Co., Bangor, Penn.
 Fred A. Fountain, 355 Tremont St., Taunton, Mass.
 Fruit Industries, Bradenton, Florida

Nicholas Gangone, Plympton St., R.D. No. 2, Middleboro, Mass.
 General Foods Corp., Corn Mill Division, Kankakee, Ill.
 General Foods Corp., Gaines Division, 180 S. Dearborn Ave., Kankakee, Ill.
 General Mills, Inc., 400 Second Ave. South, Minneapolis, Minn.
 General Mills, Inc., Farm Service Division, 530 McKnight Bldg., Minneapolis 1, Minn.
 General Mills, Inc., Larowe Division, Detroit 2, Mich.
 Glidden Co., Feed Mill Division, 1160 West 18th St., Indianapolis, Ind.
 Glidden Co., Soya Products Division, 1825 N. Laramie Ave., Chicago 39, Ill.
 Gloucester By-Products, Inc., Gloucester, Mass.
 Goldenrod Oil Meal Sales Co., 727 Beale Ave., Memphis 1, Tenn.
 Gorton-Pew Fisheries Co., Ltd., 327 Main St., Gloucester, Mass.
 D. H. Grandin Milling Co., Jamestown, N. Y.
 Great Atlantic & Pacific Tea Co., 817 Andrus Bldg., Minneapolis, Minn.

Haffenreffer & Co., Inc., 30 Germania St., Boston 30, Mass.
 Hales & Hunter Co., 141 West Jackson Blvd., Chicago 4, Ill.
 D. Harbeck & Sons, 405 Earle St., New Bedford, Mass.
 Harper Feed Mills, Inc., 271 West Wheeling St., Washington, Penn.
 Hartz Mountain Products, 36 Cooper Square, New York 3, N. Y.
 Hercules Powder Co., Dairy Products Division, 821 Marquette Ave., Minneapolis 2, Minn.

Dr. Hess & Clark, Inc., 7th & Orange Streets, Ashland, Ohio
 Hi-Life Packing Co., 431 South Dearborn St., Chicago 5, Ill.
 W. L. Hogg, Ltd., 2965 Notre Dame East, Montreal, Que., Canada
 H. P. Hood & Sons, Inc., 500 Rutherford Ave., Boston 29, Mass.
 E. C. & W. L. Hopkins, Inc., Greenfield, N. H.
 J. William Horsey Corp., West Haines St., Plant City, Florida
 Hubinger Co., 601 Main St., Keokuk, Iowa
 Humphreys-Godwin Co., 2246 Park Ave., Memphis, Tenn.

Illinois Cereal Mills, Inc., 613 South Jefferson Ave., Paris, Ill.
 Illionos Yeast Co., Princeton, Ill.
 Independent Tallow Co., 39 Cedar St., Woburn, Mass.
 Inter-Continental Grain Co., Ltd., 2 King Street East, Toronto, Ont., Canada
 International Milling Co., 800 McKnight Bldg., Minneapolis, Minn.
 International Stock Food Corp., 59 Main St., Delhi, N. Y.

Jaquith & Co., Inc., 305 Main St., Woburn, Mass.
 Juice Industries Division, Clinton Foods, Inc., Dunedin, Florida

Kansas Flour Mills Co., Division of Flour Mills of America, Inc., Kansas City 13, Mo.
 Kasco Mills, Inc., 435 Fulton St., Waverly, N. Y.
 Kellogg Co., Battle Creek, Mich.
 Spencer Kellogg & Sons, Inc., 98 Delaware Ave., Buffalo 2, N. Y.
 Kennel Food Supply Co., Inc., 63 Mill Hill Ter., Fairfield, Conn.
 Keystone Dehydrators, Nazareth, Penn.
 H. C. Knoke & Co., 5728 West Roosevelt Road, Chicago 50, Ill.
 Chas. A. Krause Milling Co., P. O. Box 1156, Milwaukee 1, Wis.
 Kronick's Coal & Grain Co., 43 Pleasant St., Adams, Mass.
 Kuder Pulp Sales Co., Lake Alfred, Florida

La Crosse Milling Co., Cochrane, Wis.
 Land O'Lakes Creameries, Inc., 2215 Kennedy St. N. E., Minneapolis 13, Minn.
 Lauhoff Grain Co., E. North St., Danville, Ill.
 Lederle Laboratories Division, American Cyanamid Co., Pearl River, N. Y.
 Libby, McNeill & Libby, 4134 S. Packers St., Chicago 9, Ill.
 Libner Grain Co., Inc., 25 Commerce St., Norwalk, Conn.
 Limestone Products Corporation of America, 122 Main St., Newton, N. J.
 Lincoln Mills, Inc., 1203 West 23d St., Indianapolis, Ind.
 L. B. Lovitt & Co., 314 Cotton Exchange Bldg., Memphis, Tenn.

McCabe Grain Co., Ltd., 400 Grain Exchange, Winnipeg, Man., Canada
 McDonald Division, Clinton Foods, Inc., Auburndale, Florida
 McMillen Feed Mills, Division of Central Soya Co., Inc., & Sub., Fort Wayne, Ind.
 Mackenzie & Winslow, Inc., Fall River, Mass.
 Mansfield Milling Co., Mansfield, Mass.
 Maple Leaf Milling Co., Ltd., Toronto, Ont., Canada
 Marden-Wild Corp., 500 Columbia St., Somerville 43, Mass.
 Marianna Sales Co., 510 Cotton Exchange Bldg., Memphis, Tenn.
 Maritime Milling Co., Inc., 1009 Chamber of Commerce, Buffalo 2, N. Y.
 Merchants Creamery Co., 536 Livingston St., Cincinnati 14, Ohio
 Merrimack Farmers' Exchange, Inc., 10 Pleasant St. Ext., Concord, N. H.
 Methuen Grain Co., Inc., Osgood St., Methuen, Mass.
 Miller Alfalfa Co., Defiance, Ohio
 Miner-Hillard Milling Co., 826 Second National Bank Bldg., Wilkes-Barre, Penn.
 Minute Maid Corp., Leesburg, Florida

Monsanto Chemical Co., 1700 S. Second St., St. Louis 4, Mo.
Montana Flour Mills Co., Cleveland, Ohio
Geo. Q. Moon & Co., Inc., 201 Chenango St., Binghamton, N. Y.
John Morrell & Co., Ottumwa, Iowa
Jas. F. Morse & Co., 11 Horace St., Somerville 43, Mass.
Morton Salt Co., 120 South LaSalle St., Chicago 3, Ill.
Mount Vernon Milling Co., Mount Vernon, Ind.
Mowat, Wilson & Co., 18675 James Couzens Highway, Detroit 35, Mich.

Herman Nagel Co., 53 W. Jackson Blvd., Chicago 4, Ill.
Nappanee Milling Co., Inc., 301 S. Jackson St., Nappanee, Ind.
National Alfalfa Dehydrating & Milling Co., 101 South 4th St., Lamar, Col.
National Biscuit Co., 449 West 14th St., New York 14, N. Y.
National Biscuit Co., Toledo Mill, 2221 Front St., Toledo, Ohio
National Distillers Products Corp., 120 Broadway, New York 5, N. Y.
National Vitamin Products Co., 3401 Hiawatha Ave., Minneapolis 6, Minn.
Near's Food Co., Inc., 115 Montgomery St., Binghamton, N. Y.
Neumond Co., 300 Merchants Exchange Bldg., St. Louis 2, Mo.
Nopco Chemical Co., Harrison, N. J.

Ogden Grain Co., Utica, N. Y.
Ogilvie Flour Mills Co., Ltd., Montreal, Que., Canada
Old Mother Hubbard Dog Food Co., Inc., 40 Prospect St., Gloucester, Mass.
Old Trusty Dog Food Co., 278 West St., Needham Heights 94, Mass.
Orleans Candy Co., 431 S. Dearborn St., Chicago 5, Ill.
Oswego Soy Products Corp., Oswego, N. Y.

Pabst Brewing Co., 221 N. LaSalle St., Chicago, Ill.
Palm Grain Co., Lowell, Mass.
Park & Pollard Co., Inc., 356 Hertel Ave., Buffalo 7, N. Y.
George H. Parker Grain Co., 56 Water St., Danvers, Mass.
Pasco Packing Co., Dade City, Florida
Patent Cereals Co., Geneva, N. Y.
Phenix Foods Co., 460 East Illinois St., Chicago, Ill.
Phenix Milling Co., Ltd., 69 Ainslie St. South, Galt, Ont., Canada
Pillsbury Mills, Inc., Minneapolis 2, Minn.
Platte Valley Products, Inc., Lexington, Neb.
Post Cereals Division, General Foods Corp., 275 Cliff St., Battle Creek, Mich.
Pratt Food Co., 130 Walnut St., Philadelphia 6, Penn.
R. C. Pratt & Co., Ltd., 18 Toronto St., Toronto, Ont., Canada.

Quaker Oats Co., Merchandise Mart Plaza, Chicago 54, Ill.
Quincy Soybean Products Co., Quincy, Ill.

Ralston Purina Co., 835 South Eighth St., St. Louis 2, Mo.
John Reardon & Sons Division of Wilson & Co., Inc., 51 Waverly St., Cambridge 39, Mass.
D. F. Riley, Hatfield, Mass.
Rohloff Bros., Inc., R.F.D., Graytown, Ohio
Rudhard Products, Inc., 248 Michigan Ave., Buffalo 3, N. Y.
Russell-Miller Milling Co., 900 Midland Bank Bldg., Minneapolis 1, Minn.
Ryther & Warren Co., Belchertown, Mass.

Schenley Distillers, Inc., 350 Fifth Ave., New York 1, N. Y.
Schoeneck Farms, Inc., R.D. No. 3, Nazareth, Penn.
Sea Board Supply Co., 35th & Grays Ferry Ave., Philadelphia 46, Penn.

Joseph E. Seagram & Sons, Inc., Seventh St. Road, Louisville 1, Ky.
 Shea Chemical Co., Inc., Adams, Mass.
 Sherwin-Williams Co., 101 Prospect Ave. N.W., Cleveland, Ohio
 Silmo Chemical Corp., Vineland, N. J.
 W. J. Small Co., Division of Archer-Daniels-Midland Co., 1200 Oak St., Kansas City 6, Mo.
 Allen V. Smith, Inc., Marcellus Falls, N. Y.
 J. H. Smith Grain, Inc., 102 Hale St., Haverhill, Mass.
 Southern Fruit Distributors, Inc., Orlando, Florida
 Sperti Products, Inc., 816 Clinton St., Hoboken, N. J.
 Spratt's Patent (America)), Ltd., 18 Congress St., Newark 5, N. J.
 A. E. Staley Manufacturing Co., 22nd & Eldorado Streets, Decatur, Ill.
 Staley Milling Co., 1501 Iron St., Kansas City 16, Mo.
 Standard Milling Co., 1009 Central St., Kansas City 5, Mo.
 Stock-Gro, Inc., 30 N. Michigan St., Chicago 2, Ill.
 Sturdy Dog Food Co., 2103 West Genesee St., Syracuse 4, N. Y.
 Sunshine Biscuits, Inc., Milling Division, Mechanic St., Grafton, Ohio
 Swansea Grain Co., 970 Brayton Ave., Swansea, Mass.
 Swift & Co., Union Stock Yards, Chicago 9, Ill.
 Swift & Co., Soybean Mill, Fostoria, Ohio

Taft Bros., Uxbridge, Mass.
 Taunton Grain Co., Taunton, Mass.
 Tennessee Eastman Co. Division of Eastman Kodak Co., Kingsport, Tenn.

Union Starch & Refining Co., 301 Washington St., Columbus, Ind.
 United Cooperative Farmers, Inc., 339 Broad St., Fitchburg, Mass.
 Unity Feeds, Inc., 177 Milk St., Boston 9, Mass.
 Universal Grain Company of New Jersey, 425 South St., Newark, N. J.
 George Urban Milling Co., 332 N. Oak St., Buffalo 3, N. Y.

Valier & Spies Milling Co., Division of Flour Mills of America, Inc., Kansas City 13, Mo.
 Van Iderstine Co., 37-30 Review Ave., Long Island City 1, N. Y.
 Ventura Grain Co., 7 Purchase St., Taunton, Mass.
 Victory Mills, Ltd., 285 Fleet Street E., Toronto, Ont., Canada
 O. B. Vunck & Son, Voorheesville, N. Y.

Hiram Walker & Sons, Inc., Peoria, Ill.
 C. P. Washburn Co., Middleboro, Mass.
 H. K. Webster Co., 24 West St., Lawrence, Mass.
 Western Condensing Co., Appleton, Wis.
 Whitmoyer Laboratories, Inc., Myerstown, Penn.
 Wilson's Corn Products, Inc., East 4th St., Rochester, Ind.
 Wirthmore Grain Co., Taunton
 Worcester Grain & Coal Co., 294 Franklin St., Worcester 8, Mass.
 Yieldmor Feeds, Inc., 101 South Downing St., Piqua, Ohio

Inspection of Commercial Fertilizers and Agricultural Lime Products

BY

Fertilizer Control Service Staff
Massachusetts Agricultural Experiment Station



This is the eightieth report of the Massachusetts Fertilizer Control made in accordance with Chapter 94, Sections 250 to 261, inclusive, of Massachusetts General Laws 1920, as amended by Chapter 67, Acts of 1933.

INSPECTION OF COMMERCIAL FERTILIZERS AND AGRICULTURAL LIME PRODUCTS FOR THE SEASON OF 1953

BY FERTILIZER CONTROL SERVICE STAFF

John W. Kuzmeski, *Research Professor, Official Chemist*
Albert F. Spelman, *Associate Research Professor*
C. Tyson Smith, *Associate Research Professor, Microscopist*
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PERTINENT FACTS RELATING TO MASSACHUSETTS FERTILIZER LAW

Commercial Fertilizers

Registration is required annually on January 1.

Registration fee is \$8 for each element: nitrogen, phosphoric acid, potash, magnesiumia.

Label must show:

Net weight of fertilizer

Name, brand or trade mark, and grade

Name and address of manufacturer

Guaranteed analysis: nitrogen, available phosphoric acid, water soluble potash. A guarantee of total phosphoric acid may be used instead of available phosphoric acid for bone, untreated phosphate rock, tankage, dried and pulverized manures, ground seeds, and wood ashes.

Tonnage reports are required semi-annually, on January 1 and July 1

Tonnage fee: 6 cents per ton of 2,000 pounds

Lime Products

Registration is required annually on January 1.

Registration fee: \$12 for each brand.

Label must show:

Net weight of product

Name, brand or trade mark, and form of lime

Name and address of manufacturer

Guaranteed analysis: calcium oxide, magnesium oxide, carbonates of calcium and magnesium, or calcium sulfate (in gypsum or land plaster)

Make checks payable to Massachusetts Agricultural Experiment Station and send correspondence to

JOHN W. KUZMESKI
Massachusetts Agricultural Experiment Station
Amherst, Mass.

FERTILIZER TONNAGE

Tonnage of Fertilizer Sold in Massachusetts

	1951		1952	
	Jan. 1 to July 1	July 1 to Dec. 31	Jan. 1 to July 1	July 1 to Dec. 31
Mixed fertilizers.....	58,414	8,797	61,585	9,300
Fertilizer chemicals and materials unmixed.....	9,126	3,562	9,283	4,230
Pulverized animal manures.....	1,565	737	1,503	528
TOTALS.....	69,105	13,096	72,371	14,058

Tonnage of Mixed Fertilizers, January 1 to December 31, 1952

Grade*	Tonnage		Brands	Grade*	Tonnage		Brands
	Jan. 1 to July 1	July 1 to Dec. 31			Jan. 1 to July 1	July 1 to Dec. 31	
5-10-10	14,695	1,930	29	8-6-2	730	231	7
5-8-7	8,272	818	21	0-14-14	600	308	10
0-10-20	7,499	362	8	8-6-4	572	161	—
6-3-6	6,680	250	11	3-12-12	550	225	—
5-10-5	4,780	903	28	6-10-4	430	95	7
7-7-7	4,532	868	16	4-12-16	330	86	—
8-16-16	2,049	681	9	0-20-20	229	110	5
10-10-10	1,323	547	—	3-12-6	188	—	—
4-12-4	851	59	9	4-12-8	142	3	—
5-8-10	831	10	—	0-12-24	119	212	—
8-8-8	818	42	6	10-6-4	49	49	—
6-8-8	759	31	7	Miscellaneous	4,557	1,319	—
				TOTALS	61,585	9,300	268

* The grade represents the plant food guarantee and is expressed in the order of nitrogen, available phosphoric acid, potash.

Tonnage of Unmixed Materials, January 1 to December 31, 1952

Material	Tonnage		Brands
	Jan. 1 to July 1	July 1 to Dec. 31	
Superphosphate.....	2,668	1,589	13
Process tankage and activated sewage.....	2,202	1,222	—
Pulverized animal manures.....	1,503	528	29
Nitrate of soda.....	962	322	—
Cottonseed meal.....	896	176	—
Ammonium nitrate.....	722	298	—
Bone meal.....	496	293	15
Muriate of potash.....	311	130	8
Sulfate of ammonia.....	232	50	9
Castor pomace.....	227	31	5
Rock phosphate.....	159	51	—
Cyanamid.....	101	43	—
Miscellaneous.....	307	25	—
TOTALS.....	10,786	4,758	111

MIXED FERTILIZERS

Deficiency Statistics for Mixed Fertilizers

Manufacturer	Number of Samples		Number of Tests				
	Analyzed	With No Deficiencies	Totals	Less than $\frac{1}{4}$ Per Cent Below Guarantee	Between $\frac{1}{4}$ and $\frac{1}{2}$ Per Cent Below Guarantee	Between $\frac{1}{2}$ and $\frac{3}{4}$ Per Cent Below Guarantee	More than $\frac{3}{4}$ Per Cent Below Guarantee
American Agricultural Chemical Co....	53	40	128	3	6	4	1
Apothecaries Hall Co.	25	25	77	0	0	0	0
Armour Fertilizer Works.....	25	17	77	4	2	2	0
F. A. Bartlett Tree Expert Co.....	1	1	3	0	0	0	0
Joseph Breck & Sons Corp.....	3	3	10	0	0	0	0
Carbola Chemical Co., Inc.....	1	0	3	0	0	0	1
J. J. Chesnicka Landscape Service.....	1	1	3	0	0	0	0
Clinton Nurseries.....	2	1	6	0	1	0	2
Consolidated Rendering Co.....	43	26	124	13	4	2	4
Davison Chemical Corp.....	4	4	12	0	0	0	0
E. I. du Pont de Nemours & Co.....	1	1	3	0	0	0	0
Eastern States Farmers' Exchange, Inc.	17	10	63	3	3	2	0
Essex County Cooperative Farming Assn.	4	4	13	0	0	0	0
Excell Laboratories, Inc.....	1	1	3	0	0	0	0
Faesy & Besthoff, Inc.....	3	3	9	0	0	0	0
Farm Bureau Assn.....	6	2	21	1	0	1	2
Forrest's Greenhouses.....	1	1	3	0	0	0	0
Fox Point Chemical Co.....	7	6	25	0	1	0	0
Frank's Market Garden.....	1	1	3	0	0	0	0
General Floral Products Co.....	1	0	3	0	0	0	1
Goulard & Olena, Inc.....	4	3	12	0	0	0	1
C. L. Halvorson Tree Service.....	1	1	3	0	0	0	0
Heinl's Greenhouses.....	1	0	3	0	1	0	0
A. H. Hoffman, Inc.....	1	1	3	0	0	0	0
Hydroponic Chemical Co., Inc.....	1	1	3	0	0	0	0
Hy-Trous Corp.....	2	1	6	0	1	0	0
International Minerals & Chemical Corp.....	24	16	92	4	3	1	0
Lexington Gardens, Inc.....	1	1	3	0	0	0	0
Monsanto Chemical Co.....	1	0	3	1	0	0	0
Old Deerfield Fertilizer Co., Inc.....	33	31	102	0	1	0	1
Olds & Whipple, Inc.....	15	15	48	0	0	0	0
Oswego Soy Products Corp.....	1	1	3	0	0	0	0
Pedigreed Seed Co.....	1	1	3	0	0	0	0
F. G. Phillips Co.....	1	1	3	0	0	0	0
Plantabbs Corp.....	1	1	3	0	0	0	0
Ra-Pid-Gro Corp.....	1	0	3	0	0	1	0
Rogers & Hubbard Co.....	25	21	74	0	3	1	0
Rose Manufacturing Co.....	1	0	3	0	1	0	0
Ross Daniels, Inc.....	1	0	3	0	0	0	2
O. M. Scott & Sons Co.....	3	2	9	0	1	0	0
Sears, Roebuck & Co.....	9	8	27	0	0	0	1
Stern's Garden Products, Inc.....	1	1	3	0	0	0	0
Stim-U-Plant Laboratories Co.....	2	2	6	0	0	0	0
Swift & Company Plant Food Division	10	6	28	0	1	3	2
Universal Chemical Co.....	1	1	3	0	0	0	0
Valley Feed & Supply Co., Inc.....	1	0	3	0	0	2	0
Victor Chemical Works.....	1	1	3	0	0	0	0
C. P. Washburn Co.....	1	1	3	0	0	0	0
Woodruff Fertilizer Works, Inc.....	1	0	3	1	0	0	0
TOTALS.....	346	264	1,050	30	29	19	18

Mixtures Showing a Commercial Shortage of \$1 or More per Ton

Manufacturer and Brand	Nitrogen Found		Available Phosphoric Acid Found	Water Soluble Potash (K ₂ O) Found	Approximate Commercial Shortage per Ton
	Water Insoluble Organic	Total			
American Agricultural Chemical Co. Agrico for New England 5-8-7 (a)	-	4.75	7.89	7.00	\$1.51
Clinton Nurseries New Era African Violet Food 5-12-9.....		4.43	10.44	7.45	<i>b</i>
Consolidated Rendering Co. Corenco Peerless Potato 5-10-10 (a).....	-	4.87	9.69	10.00	1.25
Corenco Two in One 8-16-16 (a).....	—	6.95	15.22	15.20	6.27
Farm Bureau Association Farm Bureau 7-7-7, 2% magnesium oxide.....	—	6.21	7.53	7.45	1.67
International Minerals & Chemical Corp. International 8-6-2, 1% magnesium oxide (a)...	.58	7.44	6.02	2.58	1.31
Ross Daniels, Inc. Ross Pow-R Caps 10-52-17....	-	10.14	48.20	15.83	<i>b</i>
Sears, Roebuck & Co. Cross Country Evergreen Food 10-6-4.....	1.73	8.08	7.28	4.00	<i>b</i>
Swift & Co. Plant Food Division Red Steer 5-10-10.....	—	5.21	9.58	9.00	1.50
Valley Feed & Supply Co., Inc. Adorna 3-1-1.....	—	2.37	1.40	.44	<i>b</i>

a See table of "Mixtures Substantially Complying with Guarantees."

b Since this material is sold in small packages, a calculation of the shortage per ton is not feasible. Deficiency found is great enough for inclusion of this material with seriously deficient brands.

EXPLANATION OF TABLE OF ANALYSES

Guarantee. The plant food guarantee or the grade of each fertilizer is made a part of the trade name under the heading "Name of Manufacturer and Brand" and is expressed as nitrogen, available phosphoric acid, and water soluble potash in that order.

Mixtures Substantially Complying with the Guarantee. In addition to those fertilizers that meet their guarantees in every respect, this table includes also a list of those mixtures that have one or more elements below the guaranteed percentage but have a shortage of less than \$1 per ton.

This table, in addition to the data mentioned in the next paragraph, contains only results of analytical tests pertaining to the average amount of water insoluble nitrogen present in each brand, since this information is of value to tobacco growers and other users of fertilizers containing a high percentage of this form of nitrogen.

Potash Forms. Tests for chlorine are made only on tobacco mixtures and on those fertilizers that carry a guarantee of potash in forms other than muriate. When the amount of chlorine present in any brand exceeds the tolerance allowed for that brand, this fact is indicated by a footnote.

Mixtures Substantially Complying with Guarantees

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
American Agricultural Chemical Co.		
AA Quality Fertilizer 0-14-14.....	1	—
AA Quality Fertilizer 3-12-12.....	1	—
AA Quality Fertilizer 4-12-4.....	1	—
AA Quality Fertilizer 5-8-7.....	2	—
AA Quality Fertilizer 5-8-10.....	5	—
AA Quality Fertilizer 5-10-10.....	3	—
AA Quality Fertilizer 6-8-8.....	4	—
AA Quality Fertilizer 7-7-7.....	1	—
AA Quality Fertilizer 8-8-8.....	4	—
Agrico Phosphate & Potash 0-10-20.....	1	—
Agrico Phosphate & Potash 0-14-14.....	1	—
Agrico for Corn 4-12-4.....	2	—
Agrico for New England 5-8-7... (a).....	2	—
Agrico Rose Food 5-9-6.....	1	1.99
Agrico for Gardens 5-10-5.....	1	—
Agrico for Onions 5-10-5.....	3	—
Agrico for Truck 5-10-5.....	1	—
Agrico for Potatoes 5-10-10, 2% magnesium oxide.....	5	—
Agrico for Tobacco 6-3-6.....	3 <i>b</i>	2.68
Agrico for Turf 6-8-2.....	1	2.20
Agrico for Broadleaf Evergreens 6-10-4.....	1	.78
Agrico Country Club Fertilizer 6-10-4.....	2	.50
Agrico for Lawns, Trees & Shrubs 6-10-4.....	1	.48
Agrico for Top Dressing 7-7-7.....	4	—
Agrico Country Club Fertilizer 8-6-4.....	1	.67
Apothecaries Hall Co.		
Green Gro Home Garden Fertilizer 5-8-7.....	1	—
Green Gro 3-Way-3 Lawn Dressing 6-10-4.....	1	1.23
Liberty Fertilizer 0-10-20.....	1	—
Liberty Fertilizer 3-12-12.....	1	—
Liberty Fertilizer 4-12-4.....	1	—
Liberty High Grade Market Gardeners 5-8-7.....	2	—
Liberty High Grade Market Gardeners 5-8-7, 2% magnesium oxide.....	1	—
Liberty Fertilizer 5-10-5.....	2	—
Liberty Fertilizer 5-10-10.....	3	—
Liberty Fertilizer 5-10-10, 2% magnesium oxide.....	1	—
Liberty Tobacco Mixture 6-3-6.....	4 <i>b</i>	3.03
Liberty 6-8-8 with Sulphate of Potash.....	1 <i>b</i>	—
Liberty 6-8-8, 2% magnesium oxide.....	2	—
Liberty Special for Fruit and Grass 7-7-7.....	2	—
Liberty Fertilizer 8-8-8.....	2	—
Armour Fertilizer Works		
Big Crop 5-8-7.....	3	—
Big Crop 5-10-5.....	2	—
Big Crop 5-10-10.....	4	—
Big Crop 5-10-10, 2% magnesium oxide.....	2	—
Big Crop 7-7-7.....	2	—
Big Crop 8-16-16.....	1	—
Gold Bond Tobacco Grower 6-3-6.....	3 <i>b</i>	3.03
Vertagreen Plant Food 5-10-5.....	2	—
Vertagreen Plant Food for Commercial Crops 6-12-6.....	2	—
Vertagreen Plant Food for Commercial Crops 6-12-12.....	3	—
Vertagreen Plant Food for Professional Use 10-6-4.....	1	2.10

a See Table of "Mixtures Showing a Commercial Shortage of \$1 or More per Ton."

b Potash in forms other than muriate.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
F. A. Bartlett Tree Expert Co.		
Bartlett Green Tree Food 6-8-6.....	1	.26
Joseph Breck & Sons Corp.		
Breck's Quick-Life 14-30-16.....	1	—
Brexone Garden-Gro 5-10-10, 2% magnesium oxide.....	1	—
Brexone Turf-Gro 8-6-2.....	1	.67
Carbola Chemical Co., Inc.		
CCC Triple 20 Plant Food 20-20-20.....	1	—
Central Chemical Corp.		
Farmrite Rose Food 7-8-5 (old stock).....	1	.76
J. J. Chesnicka Landscape Service		
Chesnicka Sod Builder 9-7-4.....	1	2.60
Clinton Nurseries		
New Era Rose Food 5-10-5.....	1	.20
Consolidated Rendering Co.		
Corenco 0-10-20 Hay & Pasture Special.....	3	—
Corenco 0-14-14 Top Dresser.....	3	—
Corenco 4-12-4 Complete Manure.....	2	—
Corenco 4-12-16 Ladino Special.....	2	—
Corenco 5-8-7 Potato & General Crop.....	3	—
Corenco 5-10-5 Home Garden.....	3	—
Corenco 5-10-5 Onion Special—Super Truck.....	3	—
Corenco 5-10-10 Peerless Potato (a).....	3	—
Corenco 5-10-10, 2% soluble magnesium oxide.....	1	—
Corenco 6-3-6 Perfection Tobacco Grower.....	2 b	3.36
Corenco 6-3-6 Premium Tobacco Grower.....	2 b	2.34
Corenco 6-8-8 Potato Special.....	1	—
Corenco 7-7-7 Complete Fruit & Top Dressing.....	3	—
Corenco 8-6-4 Landscape.....	4	.79
Corenco 8-6-4 Turf Green.....	2	2.97
Corenco 8-8-8.....	1	—
Corenco 8-16-16 Two-in-One (a).....	2	—
Corenco 10-6-4 (old stock).....	1	.22
Davison Chemical Corp.		
Davco Granulated 5-8-7.....	1	—
Davco Granulated 5-10-10.....	1	—
Davco Granulated 5-10-10 Potato Food, 2% magnesium oxide.....	1	—
Davco Granulated 7-7-7.....	1	—
E. I. du Pont de Nemours & Co.		
Du Pont Soluble Plant Food 19-22-16.....	1	—
Eastern States Farmers' Exchange, Inc.		
Eastern States 0-15-30.....	1	—
Eastern States 0-20-20.....	1	—
Eastern States 5-10-10, 1% magnesium oxide.....	4	—
Eastern States 5-15-15, 1% magnesium oxide.....	1	—
Eastern States 8-4-8 Tobacco, 2% magnesium oxide.....	2 b	2.61
Eastern States 8-12-12, 2% magnesium oxide.....	1	—
Eastern States 8-12-12 L. C., 2% magnesium oxide.....	1	—
Eastern States 8-12-16, 2% magnesium oxide.....	1	—
Eastern States 8-16-16, 1% magnesium oxide.....	2	—
Eastern States 10-10-10, 1% magnesium oxide.....	2	—
Eastern States Plant Starter 10-52-17.....	1	—

a See Table of "Mixtures Showing a Commercial Shortage of \$1 or More per Ton."

b Potash in forms other than muriate.

Mixtures Substantially Complying with Guarantees —Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Essex County Cooperative Farming Association		
S-X Brand 5-8-7.....	1	—
S-X Brand 5-10-10.....	1	—
S-X Brand 5-10-10, 2% soluble magnesium oxide.....	1	—
S-X Brand 7-7-7.....	1	—
Excell Laboratories, Inc.		
New Plant Life 2-1-2.....	1	—
Faesy & Besthoff, Inc.		
F & B Broadleaf High Organic 6-10-4.....	1	2.63
F & B High Organic Pelletized All Purpose 6-12-6.....	1	1.63
F & B Rose Food 8-10-4.....	1	1.34
Farm Bureau Association		
Farm Bureau 5-8-7, 2% magnesium oxide.....	1	—
Farm Bureau 5-10-10.....	1	—
Farm Bureau 5-10-10, 2% magnesium oxide.....	1	—
Farm Bureau 8-6-2.....	1	1.48
Farm Bureau 8-16-16.....	1	—
Forrest's Greenhouses		
Ivy Fertilizer Concentrate 7-10-19.....	1	—
Fox Point Chemical Co.		
Old Fox Brand 5-8-7, 2% magnesium oxide.....	2	—
Old Fox Brand 5-10-10.....	2	—
Old Fox Brand 5-10-10, 2% magnesium oxide.....	1	—
Old Fox Brand 7-7-7, 2% magnesium oxide.....	1	—
Old Fox Brand Turf Fertilizer 8-6-2.....	1	1.22
Frank's Market Garden		
For More Growth (FMG) .9- .9- .9.....	1	.62
General Floral Products Co., Inc.		
Dyna-Grow 4-4-2.....	1	5.58
Goulard & Olena, Inc.		
G & O Tomato Food 3-12-13.....	1	.97
G & O Rhodo, Azalea, Camellia Food 3-20-3.....	1	1.16
G & O Bulb Food 5-6-15.....	1	1.62
G & O Rose Food 7-8-5.....	1	1.49
C. L. Halvorson Tree Service		
Halvorson Tree Food 8-6-2.....	1	1.69
Heinl's Greenhouses		
Green Thumb Liquid Plant Food 5-5-10.....	1	—
A. H. Hoffman, Inc.		
Hoffman Rose Food 5-10-5.....	1	1.34
Hydroponic Chemical Co., Inc.		
Hyponex Plant Food 7-6-19.....	1	—
Hy-Trous Corp.		
Hy-Trous 4-8-4.....	2	—
International Minerals & Chemical Corp.		
International 0-10-20.....	1	—
International 0-14-14.....	1	—
International 4-12-16, 1% magnesium oxide.....	2	—

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
International Minerals & Chemical Corp.—Continued		
International 5-8-7, 1% magnesium oxide.....	2	—
International 5-10-5, 1% magnesium oxide.....	2	—
International 5-10-10, 1% magnesium oxide.....	3	—
International 5-10-10, 2% soluble magnesium oxide.....	4	—
International Tobacco 6-3-6, 2% soluble magnesium oxide....	1 b	2.82
International 6-12-12, 2% soluble magnesium oxide.....	1	—
International 7-7-7, 1% magnesium oxide.....	3	—
International 8-6-2, 1% soluble magnesium oxide (a).....	1	.61
International 10-10-10, 1% magnesium oxide.....	2	—
Lexington Gardens, Inc.		
Luxuro Plant Food 5-10-3.....	1	2.18
Monsanto Chemical Co.		
Folium 20-20-20.....	1	—
Old Deerfield Fertilizer Co., Inc.		
Old Deerfield 0-12-24.....	1	—
Old Deerfield 0-14-14.....	1	—
Old Deerfield 0-20-20.....	1	—
Old Deerfield 4-12-8.....	1	—
Old Deerfield 5-5-15 Tobacco Starter.....	1 b	—
Old Deerfield 5-8-7 All Crop.....	5	—
Old Deerfield 5-8-7, Potash other than Muriate, 2% magnesium oxide.....	2 b	—
Old Deerfield 5-10-5 Trucker's Special.....	1	—
Old Deerfield 5-10-10 Potato.....	4	—
Old Deerfield 5-10-10, Potash other than Muriate, 2% magnesium oxide.....	2 b	—
Old Deerfield 6-3-6 Complete Tobacco.....	4 b	3.39
Old Deerfield 6-4-7 Complete Tobacco.....	1 b	2.93
Old Deerfield Lawnshrub 6-5-5.....	1	1.42
Old Deerfield 6-8-8 Special Potato.....	1	—
Old Deerfield 7-7-7 Grass Top Dressing.....	3	—
Old Deerfield 8-8-8.....	2	—
Old Deerfield 8-16-16, 3% magnesium oxide.....	2	—
Olds & Whipple, Inc.		
O & W 5-3-5 Complete Tobacco, Potash from Cotton Hull Ash.....	1 b	3.05
O & W 5-8-7 Potato & General Purpose.....	2	—
O & W 5-10-5.....	2	—
O & W 5-10-5, 2% magnesium oxide.....	1	—
O & W 5-10-10 Potato.....	2	—
O & W Potato 5-10-10, 2% magnesium oxide.....	2	—
O & W 6-3-6 Blue Label Tobacco, Potash from Cotton Hull Ash.....	2 b	3.18
O & W 7-7-7 Top Dressing & Grass.....	3	—
Oswego Soy Products Corp.		
Feralon 6-10-4 Plant Food.....	1	—
Pedigreed Seed Co.		
Loft's Lawn Food 8-12-4.....	1	—
F. G. Phillips Co.		
Ferti-Flora 3-3-3.....	1	—
Plantabbs Corp.		
Fulton's Plantabbs 11-15-20.....	1	—
Ra-Pid Gro Corp.		
Ra-Pid-Gro 23-21-17.....	1	—

a See Table of "Mixtures Showing a Commercial Shortage of \$1 or More per Ton"

b Potash in forms other than muriate.

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Rogers & Hubbard Co.		
Gro-Fast Acid Fertilizer 4-10-4.....	2	—
Gro-Fast Plant Food 5-10-5.....	2	—
Gro-Fast Rose Food 7-10-5.....	1	—
Hubbard Dairy Fertilizer 0-10-20.....	1	—
Hubbard Alfalfa Fertilizer 0-14-14.....	1	—
Hubbard Seeding Fertilizer 3-12-12.....	1	—
Hubbard Corn Fertilizer 4-12-4.....	1	—
Hubbard Vegetable Fertilizer 5-8-7.....	2	—
Hubbard Garden Fertilizer 5-10-5.....	1	—
Hubbard General Crop 5-10-10.....	1	—
Hubbard High Potash 5-10-10.....	2	—
Hubbard High Potash 5-10-10, 2% magnesium oxide.....	1	—
Hubbard Tobacco Grower 6-3-6.....	1 <i>b</i>	3.29
Hubbard Valley Brand 6-3-6.....	2 <i>b</i>	2.72
Hubbard 6-8-8 for Potatoes.....	2	—
Hubbard Top Dressing 7-7-7.....	2	—
Hubbard Golf Course Fertilizer 8-6-2.....	1	1.51
Hubbard Double Strength Fertilizer 8-16-16.....	1	—
Rose Manufacturing Co.		
Tri-Ogen Rose Food 5-10-5.....	1	.48
O. M. Scott & Sons Co.		
Scotts Weed & Feed 7-11-5.....	1	3.52
Scotts Turf Builder 9-7-4.....	2	1.92
Sears, Roebuck & Co.		
Cross Country Bulb Food 4-12-8.....	1	1.88
Cross Country Lawn Food 5-2.25-0.....	1	4.96
Cross Country Lawn Food & Weed Killer 5-10-5.....	1	—
Cross Country Plant Food 5-10-5.....	2	—
Cross Country Rose Food 5-10-5.....	1	1.14
Cross Country Evergreen Food 8-6-4.....	1	1.89
Cross Country Liquid Plant Food 10-5-5.....	2	—
Stern's Garden Products, Inc.		
Miracle Gro 15-30-15.....	1	—
Stim-U-Plant Laboratories Co.		
Stim-U-Plant African Violet Food 5-8-7.....	1	—
Stim-U-Plant Tablets 11-12-15.....	1	—
Swift & Co. Plant Food Division		
All Organic Lawn Food 5-3-0.....	1	4.97
Brimm 5-10-10.....	1	—
Pasturgro 5-10-10.....	1	—
Red Steer 0-14-14.....	1	—
Red Steer 5-8-7.....	1	—
Vigoro 5-10-5.....	2	—
Vigoro Commercial Garden 8-8-8.....	1	—
Instant Vigoro 19-28-14.....	1	—
Universal Chemical Co.		
Electra Plant Food 5-10-3.....	1	2.06
Victor Chemical Works		
Take-Hold 10-52-17.....	1	—
C. P. Washburn Co.		
Washburn's Potato Fertilizer 5-10-10.....	1	—
Woodruff Fertilizer Works, Inc.		
Woodruff's 5-8-7 Fertilizer.....	1	—

a See Table of "Mixtures Showing a Commercial Shortage of \$1 or More per Ton."

b Potash in forms other than muriate.

MAGNESIUM OXIDE GUARANTEES

There has been some confusion regarding magnesium oxide guarantees. So far as the Fertilizer Control Service is concerned, the magnesium oxide guaranteed must be in a water-soluble form only if the guarantee is stated in terms of water-soluble magnesium oxide. Otherwise the magnesium oxide may be present either in a water-soluble or a water-insoluble form, so long as the total amount of magnesium oxide found equals or exceeds the amount guaranteed.

Because of several inquiries regarding the form in which magnesium oxide is present in the different fertilizers, all fertilizers carrying magnesium oxide guarantees were analyzed for both total and water-soluble magnesium oxide. The following table lists the results.

Mixtures Carrying Magnesium Oxide Guarantees

Manufacturer Brand Name and Grade	Found Percent	
	Total Magnesium Oxide	Water-Soluble Magnesium Oxide
American Agricultural Chemical Co.		
Agrico for Potatoes 5-10-10, 2% magnesium oxide.....	2.26 2.46 2.58 2.46 2.04	1.36 1.27 1.45 1.72 1.18
Apothecaries Hall Co.		
Liberty High Grade Market Gardeners 5-8-7, 2% magnesium oxide.....	3.12	1.13
Liberty Fertilizer 5-10-10, 2% magnesium oxide.....	2.90	2.22
Liberty 6-8-8, 2% magnesium oxide.....	4.64 4.05	2.49 2.26
Armour Fertilizer Works		
Big Crop 5-10-10, 2% magnesium oxide.....	3.19 2.75	1.22 .91
Joseph Breck & Sons Corp.		
Brexone Garden-Gro 5-10-10, 2% magnesium oxide.....	2.69	2.18
Consolidated Rendering Co.		
Corenco 5-10-10, 2% soluble magnesium oxide.....	2.46	1.81
Davison Chemical Corp.		
Davco Granulated 5-10-10 Potato Food, 2% magnesium oxide ..	3.14	2.49
Eastern States Farmers' Exchange, Inc.		
Eastern States 5-10-10, 1% magnesium oxide.....	2.90 3.45 2.62 3.62	1.00 1.13 1.27 1.54
Eastern States 5-15-15, 1% magnesium oxide.....	1.12	.68
Eastern States 8-4-8 Tobacco, 2% magnesium oxide.....	4.71 4.64	1.63 1.59
Eastern States 8-12-12, 2% magnesium oxide.....	3.28	2.63
Eastern States 8-12-12 L. C., 2% magnesium oxide.....	3.97	2.72
Eastern States 8-12-16, 2% magnesium oxide.....	2.46	2.22
Eastern States 8-16-16, 1% magnesium oxide.....	1.81 1.50	1.49 1.49
Eastern States 10-10-10, 1% magnesium oxide.....	1.25 1.75	.68 .82

Mixtures Carrying Magnesium Oxide Guarantees—Concluded

Manufacturer Brand Name and Grade	Found Percent	
	Total Magnesium Oxide	Water-Soluble Magnesium Oxide
Essex County Cooperative Farming Association		
S-X Brand 5-10-10, 2% soluble magnesium oxide.	3.41	2.31
Farm Bureau Association		
Farm Bureau 5-8-7, 2% magnesium oxide.	2.32	.41
Farm Bureau 5-10-10, 2% magnesium oxide.	3.15	1.54
Farm Bureau 7-7-7, 2% magnesium oxide.	2.39	.45
Fox Point Chemical Co.		
Old Fox Brand 5-8-7, 2% magnesium oxide.	{ 1.53 3.55	.27 .50
Old Fox Brand 5-10-10, 2% magnesium oxide.	2.51	1.36
Old Fox Brand 7-7-7, 2% magnesium oxide.	2.46	.41
International Minerals & Chemical Corp.		
International 4-12-16, 1% magnesium oxide	{ 1.12 2.02	.82 .86
International 5-8-7, 1% magnesium oxide.	{ 1.01 1.93	.68 .50
International 5-10-5, 1% magnesium oxide.	{ 1.05 1.81	.77 .63
International 5-10-10, 1% magnesium oxide.	{ 1.50 1.34 1.99	1.04 .86 .82
International 5-10-10, 2% soluble magnesium oxide.	{ 2.71 2.32 3.90 2.90	2.54 2.31 3.40 2.54
International Tobacco 6-3-6, 2% soluble magnesium oxide.	4.94	2.81
International 6-12-12, 2% soluble magnesium oxide.	2.68	2.54
International 7-7-7, 1% magnesium oxide.	{ 1.05 1.50 1.88	.54 1.18 .54
International 8-6-2, 1% soluble magnesium oxide.	{ 3.05 3.32	2.08 2.36
International 10-10-10, 1% magnesium oxide.	{ 1.55 1.45	.50 .82
Old Deerfield Fertilizer Co., Inc.		
Old Deerfield 5-8-7, Potash other than Muriate, 2% magnesium oxide.	{ 4.00 4.80	2.72 2.44
Old Deerfield 5-10-10, Potash other than Muriate, 2% magnesium oxide.	{ 2.65 2.65	2.26 2.17
Old Deerfield 8-16-16, 3% magnesium oxide.	{ 4.06 3.48	2.63 2.35
Olds & Whipple, Inc.		
O & W 5-10-5, 2% magnesium oxide.	3.42	1.27
O & W Potato 5-10-10, 2% magnesium oxide.	{ 2.68 2.68	2.00 1.63
Rogers & Hubbard Co.		
Hubbard High Potash 5-10-10 2% magnesium oxide.	2.65	2.26

SMALL PACKAGE FERTILIZERS

Anyone interested in either outdoor gardening on a small scale or indoor growing of potted flower plants knows that in recent years the sale of small package fertilizers has increased tremendously. During the spring and summer months the garden supply houses are stocked with such a variety of different brands of garden and flower fertilizers, or plant foods as most of them are called, that the average gardener must have some difficulty in deciding which to buy.

The gardener is subjected to various forms of high pressure advertising by radio and full page spreads in newspapers and garden magazines extolling the marvelous virtues of this or that garden plant food. *Magical, wonder, enchanted, miracle*, and similar words to describe these products commonly appear in the advertisements. Sometimes claims are made for the presence of a multitude of trace minerals, vitamins, organic compounds, etc. And the average prices per pound of plant food range from 25 cents to \$26.60 on products sold in the State.

The Massachusetts Fertilizer Control Service does not pretend to know all the answers regarding garden and flower fertilizers. The purpose of this article is to present some facts regarding the composition and price of fertilizers. These facts may be of some help to gardeners.

One may wonder why the cost of one pound of plant food in some small package fertilizers runs as high as \$26.60. There are several reasons for this. In the first place the housewife's reluctance to wrestle with an 80- or 100-pound bag of fertilizer every time she wants to give her potted flowers some plant food is understandable. She demands a smaller package and is willing to pay a higher price per unit of plant food because she knows that it costs considerably more to sell any commodity in a small package than it does to sell it in large lots.

Second, the advertising cost connected with the sale of some of these products is high. In some instances this is probably the largest item of expense for the fertilizer manufacturer. This cost obviously must be paid by the purchaser of the products being advertised.

Third, the water soluble materials present in some of these plant foods cost more than some of the ingredients found in regular farm fertilizers. However, unless fertilizers that are entirely water soluble are used as plant starters or for growing plants in water or sand cultures, they have no particular advantage over the regular fertilizers, except that of ease of application.

Fourth, the margin of profit in the sale of the small package fertilizer is usually considerably higher than that for regular fertilizers.

These four factors combined mean, in some cases, a unit cost that far exceeds the cost for a similar unit of plant food in a bag of regular commercial fertilizer. For the smallest sized packages intended almost solely for small lots of potted flower plants the total amount expended by any one individual is so small that the economic factor is hardly worth considering. In this case the convenience of handling a small package and the absence of objectionable odor or dust while applying the fertilizer to plants probably outweigh the extra cost, especially so far as most women are concerned.

However, some of these small package fertilizers are advertised for use on outside gardens as well. In such instances the cost of the fertilizer may amount to a sum considerable enough to justify examination of the fertilizer value that the gardener is getting for his money.

So far as the nitrogen, available phosphoric acid, potash, calcium, and magnesium are concerned, it should be noted that these elements, if present as guaranteed, are just as effective for plant growth in one fertilizer as they are in another, regardless of the glowing terms to describe the special efficacy of these elements in some products. As for the trace minerals, vitamins, and other special ingredients sometimes claimed to be present, the amount of these in any fertilizer is so small that their cost should not be used as an excuse for a considerably higher price than that charged for another fertilizer without such claims. It should be remembered that the regular farm fertilizers supply all the plant food elements needed to grow good crops in soil.

The largest tonnage of fertilizer sold in Massachusetts during 1952 was the 5-10-10 grade. The average price was approximately \$60.00 per ton. Since the combined percentages of nitrogen, available phosphoric acid, and potash present in this grade total 25, the fertilizer contains 500 pounds of guaranteed plant food per ton. It also contains large amounts of calcium and sulfur, moderate amounts of magnesium, iron, and aluminum, and trace amounts of copper, zinc, boron, manganese, and many other elements. Considering only the 500 pounds of plant food guaranteed and the ton cost of \$60.00, we arrive at a figure of 12 cents per pound of plant food.

Bearing in mind all the preceding information, the gardener should find the following table of some help. The reader is left to judge for himself whether any costs given are too high. The fertilizer Control Service has no jurisdiction over fertilizer prices. The cost per pound of plant food was calculated in the same manner as the cost for the 5-10-10 grade mentioned above.

SMALL PACKAGE FERTILIZERS

Manufacturer and Brand Name	Weight of Package	Cost of Package	Average Cost of One Pound of Plant Food
American Agricultural Chemical Co.			
Agrico for Broadleaf Evergreens 6-10-4.....	5 lbs.	\$.63	\$.63
Apothecaries Hall Co.			
Green Gro Home Garden Fertilizer 5-8-7.....	5 lbs.	.60	.60
Joseph Breck & Sons Corp.			
Breck's Quick-Life 14-30-16.....	1.5 lbs.	2.25	2.50
Carbola Chemical Co., Inc.			
CCC Triple 20 Plant Food 20-20-20.....	1 lb.	1.00	1.67
Central Chemical Corp.			
Farmrite Rose Food 7-8-5.....	5 lbs.	.75	.75
Clinton Nurseries			
New Era Rose Food 5-10-5.....	5 lbs.	.79	.79
New Era African Violet Plant Food 5-12-9.....	3 oz.	.35	7.15
E. I. du Pont de Nemours & Co.			
Du Pont Soluble Plant Food 19-22-16.....	6 oz.	.69	3.23
Eastern States Farmers' Exchange, Inc.			
Eastern States Plant Starter 10-52-17.....	3 lbs.	.60	.25
Excell Laboratories, Inc.			
New Plant Life 2-1-2.....	2 oz.	.25	26.60
Faesly & Besthoff, Inc.			
High Organic Pelletized All Purpose Fertilizer 6-12-6..	5 lbs.	.75	.63
Broadleaf High Organic 6-10-4.....	5 lbs.	.70	.70
Rose Food 8-10-4.....	5 lbs.	.70	.64
Forrest's Greenhouse			
Ivy Fertilizer Concentrate 7-10-19.....	1 oz.	.10	4.44
Garden Research Laboratories			
RX-15 15-30-15.....	1.5 lbs.	2.25	2.50
General Floral Products Co., Inc.			
Dyna-Grow 4-4-2.....	5 oz.	.40	12.80
Goulard & Olenka, Inc.			
Rhodo Azalea-Camellia-Holly-Blueberry Food 3-20-3..	5 lbs.	.80	.62
Special Food for Bulbs 5-6-15.....	5 lbs.	.83	.64
Tomato Food 3-12-13.....	2 lbs.	.29	.52
Rose Food 7-8-5.....	5 lbs.	.85	.85
Green Thumb Products, Inc.			
Liquid Plant Food 5-5-10.....	3 oz.	.28	7.45
A. H. Hoffman, Inc.			
Hoffman Rose Food 5-10-5.....	2 lbs.	.39	.98
Hydroponic Chemical Co., Inc.			
Hyponex 7-6-19.....	7 oz.	.50	3.78

SMALL PACKAGE FERTILIZERS—Concluded

Manufacturer and Brand Name	Weight of Package	Cost of Package	Average Cost of One Pound of Plant Food
Hydroponic Gardens, Inc.			
Enchanted Garden Soluble Plant Food 8-7-19.....	12 oz.	\$ 2.00	\$ 7.82
Hy-Trous Corp.			
Hy-Trous 4-8-4.....	1 lb.	.99	6.19
Lexington Gardens, Inc.			
Luxurto Plant Food 5-10-3.....	4 oz.	.25	5.55
Oswego Soy Products Corp.			
Feralon 6-10-4.....	3 oz.	.89	23.70
Plantabbs Corp.			
Fulton's Plantabbs 11-15-20.....	6.25 oz.	1.00	5.57
Plant-Chem, Inc.			
Plant-Chem Salts 4-7-10.....	1.12 oz.	.25	17.00
Ra-Pid-Gro Corp.			
Ra-Pid-Gro 23-21-17.....	1 lb.	1.23	2.02
Rogers & Hubbard Co.			
Gro Fast Rose Food 7-10-5.....	5 lbs.	.89	.81
Gro Fast Acid Fertilizer 4-10-4.....	5 lbs.	.75	.83
Gro Fast Plant Food 5-10-5.....	5 lbs.	.60	.60
Rose Manufacturing Co.			
Ferogen 4-12-4.....	1 lb.	.45	2.25
Triogen Rose Food 5-10-5.....	5 lbs.	1.00	1.00
Ross Daniels, Inc.			
Ross Pow-R Caps 10-52-17.....	.54 oz.	.29	10.87
Sears, Roebuck & Co.			
Cross Country Rose Food 5-10-5.....	5 lbs.	.98	.98
Cross Country Bulb Food 4-12-8.....	5 lbs.	.98	.82
Cross Country Liquid Plant Food 10-5-5.....	2.5 lbs.	.75	1.50
Cross Country Evergreen Food 10-6-4.....	5 lbs.	.89	.89
Cross Country Plant Food 5-10-5.....	5 lbs.	.49	.49
Stern's Garden Products, Inc.			
Miracle Gro 15-30-15.....	.5 lb.	1.00	3.33
Stim-U-Plant Laboratories Co.			
Plant Food Tablets 11-12-15.....	.28 lb.	.75	7.05
Stim-U-Plant for African Violets 5-8-7.....	3 oz.	.35	9.35
Swift & Co. Plant Food Division			
Vigoro Tablets 5-10-5.....	.17 lb.	.49	14.40
Vigoro 5-10-5.....	5 lbs.	.53	.53
Instant Vigoro 19-28-14.....	8 oz.	.80	2.62
Victor Chemical Works			
Take Hold Plant Starter 10-52-17.....	3 lbs.	.98	.41

NITROGEN COMPOUNDS

Manufacturer and Brand	Nitrogen	
	Found	Guaranteed
American Agricultural Chemical Co.		
Agrinite.....	8.84 8.33	8.25 8.25
Castor Pomace.....	4.03	4.50
American Cyanamid Co.		
Aero Cyanamid Granular 20%.....	20.00 20.05	20.00 20.00
Aero Cyanamid Special Grade 21%.....	22.04	21.00
Aeroprills Ammonium Nitrate.....	34.12 33.72	33.50 33.50
Chilean Nitrate Sales Corp.		
Chilean Nitrate of Soda—Champion Brand.....	16.15	16.00
Chilean Nitrate of Soda—Champion Brand (old stock).....	16.00	16.00
Consolidated Rendering Co.		
Corenco Organic Tankage.....	8.49	8.25
E. I. du Pont de Nemours & Co.		
Du Pont Nu Green Fertilizer Compound.....	44.76	45.00
Eastern States Farmers' Exchange, Inc.		
Castor Pomace.....	5.86	5.50
International Minerals & Chemical Corp.		
Castor Pomace (old stock).....	6.31	4.53
Nitrogen Division, Allied Chemical & Dye Corp.		
Arcadian Nitrate of Soda.....	16.07 16.04	16.00 16.00
Old Deerfield Fertilizer Co., Inc.		
Cottonseed Meal 41%.....	6.91	6.56
Sulphate of Ammonia.....	21.23	20.50
Rogers & Hubbard Co.		
Sulphate of Ammonia.....	20.69	20.50
Sears, Roebuck & Co.		
Cross Country Sulphate of Ammonia.....	20.66	20.50

PRODUCTS SUPPLYING NITROGEN AND PHOSPHORIC ACID

Manufacturer and Brand	Nitrogen		Phosphoric Acid	
	Found	Guaranteed	Found	Guaranteed
American Agricultural Chemical Co. Bone Meal.....	1.81	1.50	29.90	25.00
Armour Fertilizer Works Bone Meal.....	2.44	2.30	24.90	23.00
Central Chemical Corp. Farmrite Bone Meal.....	$\left\{ \begin{array}{l} 2.94 \\ 3.35 \end{array} \right.$	$\left\{ \begin{array}{l} 2.30 \\ 2.30 \end{array} \right.$	$\left\{ \begin{array}{l} 24.60 \\ 22.60 \end{array} \right.$	$\left\{ \begin{array}{l} 20.00 \\ 20.00 \end{array} \right.$
Consolidated Rendering Co. Corenco Ground Bone.....	2.23	1.50	28.00	27.00
Corenco Ground Bone.....	2.33	2.00	23.65	22.00
Faesy & Besthoff, Inc. F & B Bone Meal.....	2.71	2.47	27.45	23.00
Fox Point Chemical Co. Old Fox Brand Bone Meal.....	1.09	1.50	32.20	23.00
Goulard & Olenz, Inc. G & O Ground Bone.....	3.05	2.40	24.35	20.00
A. H. Hoffman, Inc. Bone Meal.....	4.78	3.70	22.10	20.00
International Minerals & Chemical Corp. Bone Meal.....	2.77	2.47	24.00	23.00
Old Deerfield Fertilizer Co., Inc. Dry Ground Fish.....	9.74	9.00	6.90	5.00
John Reardon & Sons, Inc. Rearco Ground Bone.....	2.33	1.50	25.10	23.00
Rogers & Hubbard Co. Gro-Fast Bone Meal.....	2.45	2.00	28.00	23.00
Sears, Roebuck & Co. Cross Country Bone Meal.....	4.82	2.00	22.60	26.00
Sewerage Commission of the City of Milwaukee Milorganite (a).....	5.86	6.00	4.45	—
Milorganite (b).....	5.63	6.00	4.00	—

a Available phosphoric acid found, 4.03%: guaranteed, 2%.

b Available phosphoric acid found, 3.78%: guaranteed, 2%.

PHOSPHORIC ACID COMPOUNDS

Manufacturer and Brand	Total Phosphoric Acid	Available Phosphoric Acid	
		Found	Guaranteed
American Agricultural Chemical Co.			
AA Quality Phosphate Rock.....	31.50 ^a	—	—
18% Normal Superphosphate.....	{ 19.16	18.00	18.0
	{ 19.18	18.00	18.0
	{ 18.18	18.00	18.0
	{ 18.55 ^b	18.39	18.0
Apothecaries Hall Co.			
Superphosphate 20%.....	21.35	20.29	20.0
Armour Fertilizer Works			
Big Crop Superphosphate 20%.....	20.75	20.13	20.0
Consolidated Rendering Co.			
Corenco Superphosphate 20%.....	{ 21.10	20.90	20.0
	{ 20.10	20.00	20.0
	{ 19.75	19.65	20.0
Davison Chemical Corp.			
Davco Granulated 20% Superphosphate.....	22.0	20.56	20.0
Eastern States Farmers' Exchange, Inc.			
Superphosphate 20%.....	21.60	20.26	20.0
Farm Bureau Association			
Superphosphate 20%.....	20.20	20.20	20.0
Fox Point Chemical Co.			
Old Fox Superphosphate 20%.....	20.60	20.42	20.0
Goulard & Oleno, Inc.			
G & O Superphosphate 20%.....	20.90	20.20	20.0
International Minerals & Chemical Corp.			
Superphosphate 20%.....	20.65	20.43	20.0
Old Deerfield Fertilizer Co., Inc.			
Superphosphate 20%.....	20.16	20.00	20.0
Rogers & Hubbard Co.			
Hubbard Superphosphate 20%.....	20.50	20.30	20.0

^a Guaranteed 30% total phosphoric acid.^b Old stock.

POTASH COMPOUNDS

Muriate of Potash

Manufacturer	Water Soluble Potash	
	Found	Guaranteed
American Agricultural Chemical Co.	60.40	58.0
Consolidated Rendering Co.	60.00	60.0
Eastern States Farmers' Exchange, Inc.	60.64	60.0
Farm Bureau Association	60.00	60.0
International Minerals & Chemical Corp.	{ 60.40	60.0
	{ 60.81	60.0
Old Deerfield Fertilizer Co., Inc.	60.40	60.0
Rogers & Hubbard Co.	60.40	60.0

PULVERIZED ANIMAL MANURES

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Organic Matter	Acid Insoluble Ash (Sand)
American Agricultural Chemical Co.					
Sheep Manure (1.25-1-2).....	1.29	1.50	3.12	32.3	31.4
Armour Fertilizer Works					
Pulverized Sheep Manure (1.5-1-2)....	1.50	1.50	4.18	61.8	32.6
Atkins & Durbrow, Inc.					
A & D Driconure (2-1-1).....	3.21	5.30	1.83	64.5	10.9
Central Chemical Corp.					
Farmrite Cow Manure (2-1-1).....	2.02	1.00	2.73	62.1	15.3
Farmrite Sheep Manure (2-1-1).....	2.12	1.75	2.25	37.2	36.8
Consolidated Rendering Co.					
Corenco Dried Cow Manure (2-1-1)....	2.28	1.30	1.59	67.7	11.2
Corenco Sheep Manure (2-1-2).....	1.76	1.30	2.19	48.1	32.7
A. H. Hoffman, Inc.					
Cow Manure (Dehydrated) (2-1-1)....	2.31	1.75	2.50	81.1	2.3
Sheep Manure (Kiln-Dried) 1.5-1-2)...	1.52	1.40	3.90	43.9	36.3
Natural Plant Food Co.					
Longhorn Brand Cattle Manure (2-1-2)	2.07 2.09	1.40 1.55	2.00 2.28	56.6 58.6	32.3 28.4
Premier Peat Moss Corp.					
Premier-Nure (2-1-1).....	2.45	2.00	1.89	69.6	4.5
Rogers & Hubbard Co.					
Gro-Fast Sheep Manure (1.25-1-2).....	2.17	1.95	2.03	35.3	41.9
Sears, Roebuck & Co.					
Cross Country Cattle Manure (1.5-.75-2).....	2.16	1.00	2.26	61.4	20.4
Cross Country Sheep Manure (1.5-.75-2).....	2.45	1.40	1.78	57.6	24.8
Cross Country Sheep Manure (1.5-1-2).....	1.54	1.95	3.50	42.4	39.0
Wendell S. Still					
Farmanure (2-1-1).....	2.84	2.40	1.70	72.8	3.4
Stockdale Fertilizer Co.					
Ovene (Sheep Manure) (1-1-1).....	1.82	1.25	2.01	62.6	20.0
Swift & Co. Plant Food Division					
Sheep Manure (2-1-2).....	1.78	1.90	2.90	54.2	29.3
Walker-Gordon Laboratory Co.					
Bovung (2-1-1).....	2.88	1.75	2.33	82.6	2.8

Brand Seriously Deficient

Rogers & Hubbard Co.					
Gro-Fast Cow Manure (2-1-1).....	1.21	.55	.74	70.9	9.8

Explanation of Table of Analyses

... Insoluble matter... represents material that is insoluble in dilute hydrochloric acid to which a few drops of nitric acid have been added, and is mainly sand, ...
... Under "Mechanical Analysis" the figures represent the percentage of product that would pass or be retained by the meshed sieves mentioned.

Manufacturer and Brand	Calcium Oxide (CaO)		Magnesium Oxide (MgO)		Neutralizing Value Expressed in Terms of Calcium Oxide		Insoluble Matter	Mechanical Analysis (Per Cent)	
	Found	Guaran- teed	Found	Guaran- teed	Per Cent	Pounds in One Ton		Finer than 100-mesh	Coarser than 20-mesh
Conklin Limestone Co., Inc., Canaan, Conn.									
Magnesium Agricultural Limestone.....	26.7	30	18.1	18	48.0	960	19.4	64.0	4
A. H. Hoffman, Inc.									
Hoffman Hydrated Lime.....	66.7	60	2.9	1	70.2	1404	.2	—	—
Kelley Island Lime and Transport Co.									
Tiger All Purpose Hydrated Lime...	47.3	47.12	35.2	34.14	91.2	1824	.2	—	—
Lee Lime Corp.									
Lee Double Strength Agricultural Hydrated Lime.....	47.0	45	34.1	30	90.0	1800	1.0	—	—
Lee Hydrated Lime for General Purposes.....	46.8	45	32.2	30	91.4	1828	1.1	—	—
Lee Pulverized Limestone.....	46.8	45	32.8	30	90.0	1800	.9	—	—
Lee Spray Lime.....	30.5	30	22.4	20	58.2	1164	1.9	57.0	1.2
Tobey Agra Hydrate.....	45.3	45	32.6	20	57.6	1152	3.3	52.0	1.6
Tobey Pulverized Limestone Dust.....	38.8	35	28.6	25	89.5	1790	.4	—	—
	40.6	35	26.4	25	74.1	1482	1.3	—	—
	39.6	38	8.7	8	77.9	1558	1.5	—	—
					49.6	992	13.1	94.4	none
New England Lime Co.									
Nelco Agricultural Hydrated Lime (Adams).....	72.9	70	1.8	.5	74.3	1486	1.0	—	—
Nelco Agricultural Hydrated Lime (Canaan, Conn.)...	48.8	47	34.6	31	94.5	1890	.8	—	—
Nelco Agricultural Hydrated Lime (Adams).....	53.5	50	22.8	21	53.3	1066	5.1	95.4	none
Nelco Agricultural Limestone (Canaan, Conn.)...	31.2	30	26.8	25	59.4	1188	3.2	82.9	none
Nelco Land Lime.....	38.5	35	26.8	25	72.9	1458	3.4	—	—
Shea Chemical Co., Inc.									
Hoesac Agricultural Limestone.....	54.7	54	.8	.5	54.8	1096	1.4	97.7	none
United States Gypsum Co.									
Red Top Hydrated Agricultural Lime.....	72.9	70	1.1	trace	73.0	1460	.4	—	—
USG Agricultural Limestone.....	50.6	50.5	1.4	trace	72.1	1442	1.3	—	—
			1.8	.25	52.4	1048	12.0	70.8	.4

DIRECTORY OF MANUFACTURERS WHO REGISTERED FERTILIZERS FOR SALE IN MASSACHUSETTS IN 1953

- Amalia Tree Surgeons, Inc., 5 Elm St., Manchester, Mass.
 American Agricultural Chemical Co., 285 River St., North Weymouth, Mass.
 American Chemical Paint Co., Brookside Ave., Ambler, Penn.
 American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.
 American Liquid Fertilizer Co., Inc., 2nd St. at St. Clair, Marietta, Ohio
 Apothecaries Hall Co., 28 Benedict St., Waterbury, Conn.
 Archer-Daniels-Midland Co., 600 Roanoke Bldg., Minneapolis 2, Minn.
 Armour Fertilizer Works, Carteret, N. J.
 Associated Seed Growers, Inc., Cambridge, N. Y.
 Atkins & Durbrow, Inc., 165 John St., New York 38, N. Y.
 H. J. Baker & Bro., 600 Fifth Ave., New York 20, N. Y.
 F. A. Bartlett Tree Expert Co., 60 Canal St., Stamford, Conn.
 Joseph Breck & Sons Corp., 401 Summer St., Boston 10, Mass.
 Bruncote, Inc., 55 Hamlet Ave., Woonsocket, R. I.
 Buell Fertilizer Co., Exeter, N. H.
 California Spray-Chemical Corp., Lucas and Ortho Way, Richmond, Cal.
 Carbola Chemical Co., Inc., Natural Bridge, N. Y.
 Central Chemical Corp., Lebanon, Penn.
 J. J. Chesnicka Landscape Service, 47 Broad St., Westfield, Mass.
 Chilean Nitrate Sales Corp., 120 Broadway, New York 5, N. Y.
 Clinton Nurseries, Clinton, Conn.
 Consolidated Rendering Co., 178 Atlantic Ave., Boston 10, Mass.
 Davey Tree Expert Co., 117 South Water St., Kent, Ohio
 Davison Chemical Corp., Baltimore 3, Md.
 Doggett-Pfeil Co., 642 Morris Turnpike, Springfield, N. J.
 E. I. du Pont de Nemours & Co., Wilmington, Del.
 Eastern States Farmers' Exchange, Inc., 26 Central St., West Springfield, Mass.
 Essex County Cooperative Farming Association, 144 South Main St., Topsfield, Mass.
 Excell Laboratories, Inc., 2732 Indiana Ave., Chicago 16, Ill.
 Faesy & Besthoff, Inc., 325 Spring St., New York 13, N. Y.
 Farm Bureau Association, 155 Lexington St., Waltham, Mass.
 Ford Motor Co., 3000 Schaefer Road, Dearborn, Mich.
 Forrest's Greenhouses, Waxahachie, Texas
 Fox Point Chemical Co., 49 Valley St., East Providence, R. I.
 Frank's Market Garden, 1398 Allen St., Springfield, Mass.
 Garden Research Laboratories, 141 Fifth Ave., New York 10, N. Y.
 Garfield Williamson, Inc., 1072 West Side Ave., Jersey City 6, N. J.
 General Floral Products Co., Inc., 22 Clarendon St., Boston, Mass.
 Goulard & Olen, Inc., Skillman, N. J.
 C. L. Halvorson Tree Service, 150 North St., Pittsfield, Mass.
 Heintz's Greenhouses, 4401 Lagrange St., Toledo, Ohio
 Hershey Estates, 9 West Chocolate Ave., Hershey, Penn.
 A. H. Hoffman, Inc., Landisville, Penn.
 Hoover Soil Service, Gilman, Ill.
 Horn & Supply Co., Inc., 190 Central St., Leominster, Mass.
 Humphreys-Godwin Co., 2246 Park Ave., Memphis, Tenn.
 Hydroponic Chemical Co., Inc., Copley, Ohio
 Hydroponic Gardens, Inc., Taunton, Mass.
 Hy-Trous Corp., 50 Cross St., Winchester, Mass.
 International Minerals & Chemical Corp., Woburn Mass.
 Jackson & Perkins Co., Newark, N. Y.
 David H. Jehu, Park St., North Reading, Mass.
 Kahn Bros. Co., 4425 South Halsted St., Chicago 9, Ill.
 Spencer Kellogg & Sons, Inc., 98 Delaware Ave., Buffalo 2, N. Y.
 Lexington Gardens, Inc., 93 Hancock St., Lexington, Mass.
 Loamium Company of America, 2 Kingsland Ave., Harrison, N. J.

McCormick & Co., Inc., McCormick Bldg., Baltimore 2, Md.
 Mamlon Co., 1089 Whalley Ave., New Haven 15, Conn.
 Monsanto Chemical Co., 1700 South Second St., St. Louis 4, Mo.
 Natural Plant Food Co., 210 West California St., Oklahoma City 2, Okla.
 Nitrogen Division, Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
 Nutritional Concentrates, Inc., 3090 West Liberty Ave., Pittsburgh 16, Penn.
 Old Deerfield Fertilizer Co., Inc., South Deerfield, Mass.
 Olds & Whipple, Inc., 168 State St., Hartford, Conn.
 Oswego Soy Products Corp., Oswego, N. Y.
 Pedigreed Seed Co., 44 West Broadway, New York 7, N. Y.
 F. G. Phillips Co., 255 Cedar St., Dedham, Mass.
 Plant Magic Products, Inc., 194 Wayland Ave., Providence, R. I.
 Plantabbs Corp., 1105 Maryland Ave., Baltimore 1, Md.
 Premier Peat Moss Corp., 535 Fifth Ave., New York 17, N. Y.
 Ra-Pid-Gro Corp., Dansville, N. Y.
 John Reardon & Sons Division of Wilson & Co., Inc., 51 Waverly St., Cambridge 39, Mass.
 Rogers & Hubbard Co., Portland, Conn.
 Rose Manufacturing Co., 445 Main St., Beacon, N. Y.
 Rosewell, Inc., 330 South 9th St., Lincoln, Neb.
 Ross Daniels, Inc., 713 Mulberry St., Des Moines, Iowa
 Ruhm Phosphate & Chemical Co., 1585 Maple Ave., Evanston, Ill.
 St. Louis National Stock Yards Co., National Stock Yards, Illinois
 O. M. Scott & Sons Co., Marysville, Ohio
 Sears, Roebuck & Co., 925 South Homan Ave., Chicago 7, Ill.
 Sewerage Commission of the City of Milwaukee, Milwaukee 1, Wis.
 Stern's Garden Products, Inc., Geneva, N. Y.
 Wendell S. Still, Middle Country Road, Selden, N. Y.
 Stim-U-Plant Laboratories Co., 791 South Lazelle St., Columbus 16, Ohio
 Stockdale Fertilizer Co., Morris, Ill.
 Swift & Company Plant Food Division, 25 Faneuil Hall Square, Boston 9, Mass.
 Tennessee Corp., 619-27 Grant Bldg., Atlanta, Ga.
 Thomson Phosphate Department, International Minerals & Chemical Corp., 407 South Dearborn St., Chicago 5, Ill.
 Triple A Mills, 14 Ellis Drive, Worcester, Mass.
 Universal Chemical Co., 106 Ontario St., Lynn, Mass.
 Valley Feed & Supply Co., Inc., Union Road, Spring Valley, N. Y.
 Victor Chemical Works, 141 West Jackson Blvd., Chicago 4, Ill.
 Viscoid Products Co. (Subsidiary of Druid Hill Park Seed Corp.), 525 West Pratt St., Baltimore 1, Md.
 Walker-Gordon Laboratory Co., Plainsboro, N. J.
 C. P. Washburn Co., Middleboro, Mass.
 F. H. Woodruff & Sons, Inc., Milford, Conn.
 Woodruff Fertilizer Works, Inc., Sackett Point Road, North Haven, Conn.

DIRECTORY OF MANUFACTURERS WHO REGISTERED AGRICULTURAL LIME PRODUCTS FOR SALE IN MASSACHUSETTS IN 1953

Adams Hydrate Co., 31 B St., Adams, Mass.
 Conklin Limestone Co., Inc., Sand Road, Canaan, Conn.
 Conklin Limestone Co., Inc., R.F.D., Saylesville, R. I.
 A. H. Hoffman, Inc., Landisville, Penn.
 Kelley Island Lime and Transport Co., 1132 Leader Bldg., Cleveland 14, Ohio
 Lee Lime Corp., Lee, Mass.
 Limestone Products Corp. of America, 122 Main St., Newton, N. J.
 New England Lime Co., Adams, Mass.
 Shea Chemical Co., Inc., Adams, Mass.
 United States Gypsum Co., 300 West Adams St., Chicago 6, Ill.
 Vermont Associated Lime Industries, Inc., Winooski, Vt.

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Seed Inspection

BY SEED CONTROL SERVICE STAFF



UNIVERSITY OF MASSACHUSETTS
AMHERST, MASS.



Massachusetts Agricultural Experiment Station
April 26, 1954

This report, the twenty-sixth in seed control service, is a record of work delegated to the Massachusetts Agricultural Experiment Station during 1953 by authority of Chapter 94 as amended by Chapter 377 of the Acts of 1946.

LABORATORY REGULATIONS AND FEES FOR TESTING SEED

The following regulations and fees have been approved by the Director of the Massachusetts Agricultural Experiment Station.

Field Crops:

KIND OF SEED	PURITY ONLY	GERMINATION ONLY	PURITY AND GERMINATION
Alfalfa, Rape, Ryegrasses, Soybeans, Timothy....	\$1.00	\$0.50	\$1.25
Cereals, Buckwheat, Sudan Grass, Vetches.....	1.25	.50	1.50
Clovers, Fescues, Reed Canary Grass.....	1.00	.50	1.50
Brome Grass, Millets.....	1.50	.50	2.00
Bentgrasses, Bluegrasses, Orchard Grass, Redtop	2.00	.50	2.25
Redtop (Unhulled).....	2.50	.50	2.75

Mixtures: Lawn, Pasture, Mowing, etc.

Purity only	\$2.50
Germination only.....	.50 each component
Purity and Germination.....	2.50 + .50 for each component

Special Mixtures: Consisting of two kinds of cereals, two kinds of clover only, or Timothy and one kind of clover

Purity only	\$1.25
Germination only.....	.50 for each component
Purity and Germination.....	2.00

Vegetables: Germination tests for all kinds of vegetable seeds, 30 cents each.

Cleaning Tobacco Seed: For each lot of one pound or less, based on the weight of seed as received for cleaning, 50 cents.

Kinds of Seed Not Listed: Fees for testing and for other seed determinations not listed will be based on the time consumed in making the test or for other service requested.

Free Tests: During any one calendar year, the Seed Testing Laboratory will allow two free tests of vegetable or tobacco seed to any person residing or doing business in the Commonwealth.

The minimum weights of samples to be submitted for analysis are:

- a. Two ounces of grass seed, white or alsike clover, or seeds not larger than these.
- b. Five ounces of red or crimson clover, alfalfa, ryegrasses, millet, rape, or seeds of similar size.
- c. One pound of cereal, vetches, or seeds of similar or larger size.

The minimum number of seeds of any kind to be submitted for a germination test is 400.

Samples should be taken so as to represent correctly the lot sampled, each placed in a strong container, the parcel of samples securely wrapped and addressed to **Seed Laboratory, Agricultural Experiment Station, Amherst, Mass.** Checks or Money Orders must be made payable to the University of Massachusetts and sent to the Seed Laboratory.

In no case will the final report for work done be rendered until all fees are paid.



SEED INSPECTION FOR THE SEASON OF 1953

By Seed Control Service Staff:

F. A. McLaughlin, *Associate Research Professor in Charge*

Jessie L. Anderson, *Assistant Professor*
Waldo C. Lincoln, Jr., *Laboratory Assistant*
A. Warren Clapp, *State Inspector*¹

Mrs. Phyllis Russell, *Laboratory Assistant*
Leon Stowell, *Laboratory Helper*
May J. Honnay, *Clerk*

Massachusetts Vegetable Seed Standards for 1954

The amended seed law requires in Section 261 I that the Director of the Massachusetts Agricultural Experiment Station shall, after reasonable notice and hearing and with the approval of the Commissioner of Agriculture, adopt vegetable seed germination standards, prescribe rules and regulations, and in like manner modify or amend rules and regulations governing the methods of sampling, inspecting, analyzing, testing, and examining agricultural, vegetable, and flower seeds and the tolerances to be followed in administration.

A hearing for the abovestated purpose was held in Horticultural Hall, Worcester, Massachusetts, at 3 P. M., October 18, 1946. The following set of standards was so approved and adopted:

KIND OF SEED	GERMINATION STANDARD %	KIND OF SEED	GERMINATION STANDARD %
Artichoke (<i>Cynara Scolymus</i>)	60	Kale	75
Asparagus	70*	Kohlrabi	75
Bean, Lima	70	Leek	60
Bean, Scarlet Runner	75	Lettuce	80
Bean, Other Varieties	75	Muskmelon	75
Beet	65	Mustard	75
Broccoli	75	Okra	50*
Brussels Sprouts	70	Onion	70
Cabbage	75	Parsley	60
Cabbage, Chinese	75	Parsnip	60
Carrot	55	Peas	80
Cauliflower	75	Pepper	55
Celeriac	55	Pumpkin	75
Celery	55	Radish	75
Chard, Swiss	65	Rhubarb	60
Chicory	65	Rutabaga	75
Citron	65	Salsify	75
Collard	80	Sorrel	60
Corn, Sweet	75	Soybean	75
Cress, Garden or Curled	40	Spinach, Common	60
Cress, Water	35	Spinach, New Zealand	40
Cucumber	80	Squash	75
Dandelion	45	Tomato	75
Egg Plant	60	Tomato, Husk	50
Endive	70	Turnip	80
Fetticus (Corn Salad)	70	Watermelon	70

*Including Hard Seeds. However, the percentage of germination, exclusive of hard seeds and the percentage of hard seed, if present, must be stated.

¹Employed by the State Department of Agriculture.

1953 OFFICIAL INSPECTION OF AGRICULTURAL SEEDS

From November 1, 1952, to November 1, 1953, the Seed Laboratory received 5982 samples of seed, of which 1521 were collected by the State Department of Agriculture and 4461 were sent in by seedsmen, farmers, and various State institutions.

Classification of the samples for which tests were completed, with the total number of laboratory tests involved, is listed in the following summary. It will be noted that the total number of tests required for the 5982 samples was 393 for purity and 6466 for germination.

NUMBER OF SAMPLES	NUMBER OF TESTS	
	PURITY	GERMINATION
318 Field Crops for Purity and Germination.....	318	318
529 Field Crops for Germination Only.....	.....	529
55 Lawn Mixtures and Other Types of Mixtures, for Purity; Germinations involving 259 ingredients	55	259
88 Lawn Mixtures for Germination Only; Germinations involving 388 ingredients .....	.....	388
20 Lawn Mixtures for Purity Only.....	20	.....
4428 Vegetables for Germination Only.....	.....	4428
42 Tree Seeds for Germination Only.....	.....	42
87 Tobacco Seeds for Germination Only.....	.....	87
415 Flower Seeds for Germination Only.....	.....	415
<hr/> 5982	<hr/> 393	<hr/> 6466

Field tests to determine trueness to type consist of 197 samples of vegetable seeds and 322 samples of flower seeds, respectively.

The Seed Laboratory cleaned 48 lots of tobacco seed for Connecticut Valley farmers. The gross weight of the tobacco seeds was 47.45 pounds, and the net weight for the cleaned seed was 37.60 pounds

Explanation of Tables

Tables 1 through 5 consist of data in conformity with requirements of the Seed Law defined by Chapter 94 as amended by Chapter 377 of the Acts of 1946:

- Table 1. Results of Inspection and Analyses of Field Seeds as defined under Sections 261 B1 and 261 C.
- Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds as defined under Sections 261 B1 and 261 C.
- Table 3. Results of Inspection and Germination of Vegetable Seeds as defined under Sections 261 B2 and 261 C.
- Table 4. Field Tests of Vegetable Seeds, Type and Variety Studies, as defined under Sections 261 H.
- Table 5. Studies of Flower Seeds, Laboratory and Field Tests to Determine Quality, as defined under Sections 261 H.
- Table 6. Summary, by Wholesalers, of the Performance of Flower Seeds in the Field.
- Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory. This table lists the number of samples correctly labeled or mislabeled.

All samples were taken by an inspector from the State Department of Agriculture and were tested at the Seed Laboratory according to the Rules for Seed Testing adopted by the Association of Official Seed Analysts.

Within each table the wholesalers are listed in alphabetical order, and the various kinds of seeds sold by them follow the same alphabetical arrangement. Mislabeling and other irregularities are emphasized by boldface type and explained in the final column of the table. The number preceding each analysis is for identification and reference. The line to the right of the letter "L" gives information copied from the label; that to the right of "F," what was found in the laboratory analysis.

Results of Inspection and Analyses of Field Seeds—Sections 261 B1 and 261 C.

Each lot of Agricultural Seeds except Barley, Buckwheat, Oats, Rye, and Wheat must be labeled to show the commonly accepted name and variety. When the variety is unknown, the label shall bear the statement: "Variety Unknown." The label must also show lot number or other identification; percentage, by weight, of pure seed; percentage, by weight, of inert matter; percentage, by weight, of weed seeds; percentage, by weight, of other agricultural seeds; percentage of (a) germination, exclusive of hard seeds; (b) hard seeds, if present; month and year germination test was completed; origin of Alfalfa, Red Clover, and Field Corn (other than Hybrid)—if origin is unknown, it must be so stated; name and address of the person who labeled the seed, or who sells, offers, or exposes such seed for sale; and the names of secondary noxious weed seeds and number per ounce when present singly or collectively in excess of 1 in 5 grams and 1 in 10 grams of the smaller seeds, and per pound when present in excess of 1 in 25 grams and 1 in 100 grams of the larger seeds. Secondary noxious weeds are dodder (*Cuscuta* spp.), horse nettle (*Solanum carolinense*), wild mustards (*Brassica* spp.), wild garlic and wild onion (*Allium* spp.), perennial sow thistle (*Sonchus arvensis*), corncockle (*Agrostemma Githago*), buckhorn plantain (*Plantago lanceolata*), and wild radish (*Raphanus Raphanistrum*). Seed is prohibited from sale for having a false or misleading label; unless the test for germination has been completed within a nine-month period or if it contains primary noxious weed seeds in excess of tolerance. Primary noxious weeds are Canada thistle (*Cirsium arvense*), field bind weed (*Convolvulus arvensis*), and quack grass (*Agropyron repens*).

Two hundred and sixty-seven samples of field crop seeds were analyzed in the laboratory. Results of analysis, however, are given only for samples that were mislabeled. In Table 1, complete analysis is recorded; but mislabeling, indicated by boldface type, is applied only to the items named above. Wholesaler's name is in boldface type.

Table 1

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed, Origin and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
S-736	Chewings Fescue	Belt Seed Co., Baltimore, Md.							
		Belchertown State School, Belchertown Penn State, No. 2816 (*)	L 98.06 F 98.32	0.10 0.00	1.84 1.68	0.00 0.00	90.00 91.00	12/1952 4/1953	*Seed not Penn State. Appears to be <i>Festuca rubra</i> var.—Trinity
S-1120	Wheat	Tewksbury State Hospital, Tewksbury **Winter, No. 1424	L 99.00 F 98.62	0.25 0.01	0.75 1.26	0.00 0.11	90.00 67.00	4/1953 5/1953	**Variety required unless there is a statement "Variety Unknown," "Winter," not a variety. Germination below that stated.

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed, Origin and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
S-729	Wheat	Worcester State Hospital, Worcester "Winter, No. 1424	L 99.00 F 99.10	0.25 0.02	0.75 0.81	0.00 0.07	90.00 74.00	4/1953 5/1953	**Variety required unless there is a statement "Variety Unknown." "Winter" not a variety. Germination below that stated.
1487	Millet	Arthur R. Cone, Inc., Buffalo, N. Y. Chelmsford Japanese, No. 90 x 383	L 99.43 F 99.43	0.50 0.53	0.07 0.04	0.00 0.00	88.50 70.00	4/1953 6/1953	Germination below that stated.
1486	Sudan Grass	No. 92-83 Certified Piper	L 99.49 F 98.55	0.03 0.19	0.48 1.26	0.00 0.00	89.00 87.00	5/1953 6/1953	Purity below that stated. Inert Matter exceeds that stated.
S-677	Timothy	Myles Standish State School, Taunton No. 10-184	L 99.60 F 99.68	0.10 0.09	0.25 0.18	0.05 0.05	93.75 90.00	2/1953 4/1953	Noxious weeds not declared, but 18 Buckhorn Plantain per oz. found.
1059	Timothy	Craver Dickinson Co., Buffalo, N. Y. Stanley's, No. Adams No. 66-547	L 99.70 F 99.57	0.10 0.13	0.05 0.09	0.15 0.21	90.00 76.00	2/1953 5/1953	Germination below that stated.
1107	Poa Trivialis	Albert Dickinson Co., Chicago, Ill. Community Feed Stores, East Longmeadow No. 03482	L 90.20 F 90.41	0.60 0.95	8.80 8.33	0.40 0.31	83.00 54.00	10/1952 9/1953	Germination below that stated.
1074	Corn	The Page Seed Co., Greene, N. Y. Lee Hardware Co., Lee Westbranch Sweepstakes, No. 2022 Origin-Pennsylvania	L 99.00 F 99.92	0.00 0.00	1.00 0.03	0.00 0.00	80.00 62.00	12/1952 5/1953	Germination below that stated.
1153	Millet	F. N. R. Richard, Methuen Japanese, No. J-5252	L 99.52 F 97.67	0.34 2.33	0.00 0.00	0.04 0.00	85.00 89.00	1/1953 5/1953	Purity below that stated. Weed Seed exceeds that stated.
1195	Corn	Weld & Beck, Southbridge Westbranch Sweepstakes, No. 2022 Origin-Pennsylvania	L 99.00 F 99.73	0.00 0.00	1.00 0.27	0.00 0.00	80.00 66.00	12/1952 5/1953	Germination below that stated.

Table 1. Results of Inspection and Analyses of Field Seeds (continued)

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed, Origin and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germi- nation %	Date of Test	Violations
1198	Corn	The Page Seed Co.—(Continued) Golden Sweepstakes, No. 2020 Origin-Pennsylvania	99.00 99.65	0.00 0.00	1.00 0.35	0.00 0.00	85.00 74.00	12/1952 5/1953	Germination below that stated.
S-722	Wheat	Wm. G. Scarlett & Co., Baltimore, Md. Danvers State Hospital, Danvers Mida, No. 5672	98.00 95.81	0.10 0.01	1.40 3.60	0.50 0.58	75.00 94.00	3/1953 4/1953	Purity below that stated. Inert matter exceeds that stated.
1463	Red Fescue	C. H. Symmes & Co., (Scarlet Warehouse), Winchester Creeping, No. 4860	97.00 94.40	0.50 0.13	1.40 4.40	1.10 1.07	84.00 91.00	11/1952 6/1953	Purity below that stated. Inert matter exceeds that stated.
909	Red Fescue	Stanford Seed Co., Buffalo, N. Y. B. W. Brown Grain Co., Concord Creeping, No. 3428	95.00 93.87	0.30 0.24	4.20 3.57	0.50 2.32	90.00 90.00	1/1953 4/1953	Other Crop Seed exceeds that stated.
906	Ryegrass	Domestic, No. 3571	99.10 99.35	0.20 0.26	0.39 0.39	0.31 0.00	96.00 96.00	2/1953 5/1953	Noxious weeds not declared, but 16 Brassica spp. per oz. found.
800	Millet	Cutler Grain Co., Framingham Japanese, No. 1206	98.32 99.15	1.62 0.85	0.06 0.00	0.00 0.00	85.00 60.00	12/1952 5/1953	Germination below that stated.
1095	Birdsfoot Trefoil	W. N. Potter Grain Store, No. Adams No. 5639	98.50 98.97	0.50 0.33	0.66 0.47	0.34 0.23	44.37 56.23	1/1953 5/1953	Noxious weeds not declared, but 14 Buckhorn Plantain and 1 Brassica sp. per oz. found
1357	Timothy	W. N. Potter Grain Store, Orange No. 5421	99.65 99.62	0.18 0.19	0.13 0.14	0.04 0.05	90.00 71.00	12/1952 5/1953	Germination below that stated.

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed, Origin and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
Stanford Seed Co.—(continued)									
1191	Birdsfoot Trefoil	Southbridge Grain Co., Southbridge Broadleaf, No. 5639	I 98.50 F 98.27	0.50 0.77	0.66 0.48	0.34 0.48	44.37 54.20	3/1953 5/1953	Noxious weeds not declared, but 18 Buckhorn Plantain per oz. found.
579	Red Fescue	Whitney Seed Co., Buffalo, N. Y. Farm Bureau Assoc., Waltham Creeping, No. 28699	I 98.40 F 96.53	0.12 0.05	1.02 2.39	0.46 1.03	85.00 93.00	2/1953 3/1953	Purity below that stated. Inert matter exceeds that stated. Other Crop Seed exceeds that stated.
1159	Clover	F. H. Woodruff & Sons, Inc., Milford, Conn. Spence Hardware & Supply Co., Methuen Alsike, No. 852-201	I 99.00 F 98.51	0.00 0.08	0.10 0.43	0.90 0.98	75.20 58.9	2/1953 5/1953	Germination below that stated.

Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261 C.

Each mixture of Agricultural Seeds shall be labeled to show the commonly accepted name and variety of each agricultural seed component in excess of five percent of the whole and the percentage, by weight, of each in the order of its predominance. The word "mixture" or the word "mixed" shall be shown conspicuously on the label. Other label requirements for Mixtures are the same as those for Field Seeds; hence, are not repeated here since they will be found under Table 1.

Forty-two Mixtures were received, but only seven were found to vary sufficiently from the label requirements to justify the statement of complete analysis in this table. Items that are mislabeled, also the name and address of the wholesaler, are printed in boldface type.

Table 2

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found					
1162	Associated Seed Growers, Inc., Cambridge, N. Y.									
	Sears, Roebuck & Co., Lawrence									
	Emerald Green Lawn Mixture, No. 34									
	Components:				L	F				
	*Penn State Fescue	56.03	56.75	95.00	92.00	0.54 0.35	6.31 8.09	0.87	1/1953 5/1953	*Fescue seed appears to be Festuca rubra, var. Illahee; not Festuca rubra, var. Commutata. Penn State blend.
976	Budd D. Hawkins Seed Co., Reading, Vermont									
	Sunshine Feed Store, Northampton									
	Rapid Grow Lawn Mixture, No. II 103									
	Components:				L	F				
	Domestic Ryegrass	44.55	40.09	90.00	96.00	0.45 0.51	5.96 6.63	0.09	1/1953 4/1953	Germination below that stated.

*Fescue seed appears to be *Festuca rubra*, var. *Illinoensis*; not *Festuca rubra*, var. *Communitata*. Penn State blend.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
S-1175	John D. Lyon, Inc., Cambridge, Mass. Metropolitan District Commission, Medford Special Lawn Mixture, No. 00085					L 96.20 F 95.44	0.38 0.86	3.42 3.17	0.53	1/1953 5/1953	Components not listed in order of predominance. Illahce Fescue declared, but Red Fescue not the variety Illahce found.
	Components:										
	Colonial Bent	24.50	.....	90.00	.....					
	Illahce Fescue	44.10	.....	90.00	.....					
	Redtop	27.60	.....	90.00	.....					
	Agrostis spp. (Red Top & Colonial Bent)	.....	62.15	.....	89.00						
	Red Fescue	.....	33.29	.....	70.00						Germination below that stated.
S-1501	Northern Seed Co., Providence 3, R. I. Department of Public Works, Seckonk Special Lawn Mixture, No. 176					L 95.97 F 95.97	* 1.22	* 2.82	* 0.49	3/1953 6/1953	*Required information not given. Components not listed in order of predominance.
	Components:										
	Chewings Fescue	25.00	25.28	85.00	91.00						
	White Clover	10.00	10.04	90.00	86.2						
	Redtop	15.00	15.01	90.00	88.00						
	Domestic Ryegrass	20.00	22.80	90.00	94.00						
	Alta Fescue	30.00	.....	85.00	.....					
	Meadow Fescue	.....	22.84	.....	83.00						Declared but not found. Not declared but 22.84% found.
1155	The Page Seed Co., Greene, N. Y. F. N. Robichaud, Methuen Emerald Green Lawn Mixture, No. L 14-253					L 98.60 F 98.60	0.10 0.49	2.20 0.91	0.16	1/1953 5/1953	Weed Seed exceeds that stated. Percentage exceeds that stated. Percentage below that stated. Percentage below that stated. Percentage below that stated.
	Components:										
	Common Ryegrass	47.60	63.06	90.00	90.00						
	Meadow Fescue	21.90	21.48	90.00	90.00						
	Timothy	17.40	9.14	80.00	75.00						
	White Dutch Clover	3.85	2.19	89.00	95.00						
	Kentucky Bluegrass	3.45	1.49	80.00	80.00						
	Redtop	3.40	1.24	90.00	88.00						

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds (continued)

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks								
		Label	Found	Label	Found														
605	Pedigreed Seed Co., New York City, N. Y. D'Arruda's General Store, Somerset Century Park Lawn Mixture, No. NE 201																		
												L	0.85	4.45	0.26	2/1953	Weed Seed exceeds that stated. Inert Matter exceeds that stated.		
												F	1.62	6.04		3/1953			
		Components:																	
		Common Ryegrass	30.56	17.17	90.00	88.00							Percentage less than that stated.						
		Meadow Fescue (Eng. Blue)	19.60	17.46	80.00	90.00													
		Perennial Ryegrass	14.85	15.87	85.00	88.00						Percentage exceeds that stated.							
		Timothy	9.80	20.38	80.00	75.00													
		Alfa Fescue	9.34	8.13	90.00	96.00													
		Poa Trivialis	5.40	6.04	80.00	75.00													
		Redtop	3.15	4.53	80.00	71.00						*Required information not given.							
		White Clover	2.00	2.50	(*)	89-1													
		794	Stanford Seed Co., Buffalo, N. Y. Cutler Grain Co., Framingham Liberty Lawn Mixture, No. 5001 H.											L	0.80	11.44	0.90	3/1953	Germination below that stated.
														F	0.47	12.51	0.67	4/1953	
Components:																			
Domestic Ryegrass	23.76			22.17	85.00	93.00							Germination below that stated.						
Kentucky Bluegrass	20.40			20.88	80.00	70.00													
Timothy	11.64			12.49	80.00	84.00						Germination below that stated.							
Poa Trivialis	11.16			10.36	85.00	80.00													
Red Fescue	10.00			9.36	85.00	89.00						Germination below that stated.							
Redtop	5.40			5.67	80.00	62.00													
White Clover	4.50			5.42	80.00	76-19													

Results of Inspection and Germination of Vegetable Seeds Sections 261 B2 and 261 C.

Each separate container of Vegetable Seeds must be labeled to indicate plainly the kind of seed and variety and the name and address of the person who labeled such seed or who sells, offers, or exposes it for sale. For seeds that germinate less than the Massachusetts Standard, the label must also indicate the percentage of germination exclusive of hard seeds, percentage of hard seeds if present, calendar month and year the test was completed, and the words "Below Standard" in not less than 8-point type. Date of test shall not be more than nine months old, exclusive of the month in which the test was completed. Seed that has a false or misleading label may not be sold or offered for sale.

Eight hundred and twenty samples of vegetable seeds were received and tested in the laboratory; however, Table 3 includes only those samples that were found to be mislabeled with regard to requirements of law.

The wholesaler's name, in all instances, and the germination for those samples of seed found below standard in germination are in boldface type. In samples for which the found germination is not in boldface, the germination is above standard but below germination stated.

Table 3

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Germination				Mass. Stand-ard %
			Given		Found		
			%	Date of Test	%	Month of Test	
993	Squash	W. Atlee Burpee Co., Philadelphia, Pa. Checkerboard Feed Store, East Long-meadow Summer Straightneck, No. 1025.....	80	12/1952	41	4/1953	75
1257	Chicory	Comstock, Ferre & Co., Wethersfield, Conn. A. J. Cataldo & Sons, Franklin Witloof .....	..	.....	45	5/1953	65
1391	Celery	Fredonia Seed Co., Fredonia, N. Y. A. Ruggeri & Son, Greenfield Golden Self Blanching	55	11/1952	18	5/1953	55
701	Beans	Thomas J. Grey Co., Abington, Mass. Plentiful .....	..	.....	58	4/1953	75
777	Lettuce	May King .....	..	.....	4	4/1953	80
781	Onion	Prizetaker .....	..	.....	2	4/1953	70
1279	Brussel Sprouts	Chas. C. Hart Seed Co., Wethersfield, Conn. Bowden Hardware Co., Walpole Long Island Improved	75	1/1953	60	5/1953	70
1105	Squash	Community Feed Stores, East Long-meadow Early Prolific Straightneck, No. 8651	90	12/1953	81	5/1953	75
1327	Onion	Lynde Hardware Corp., Gardner Yellow Globe Danvers	70	1/1953	48	5/1953	70
1469	Onion	Parkway Gardens, Dorchester Yellow Globe Danvers	70	1/1953	9	6/1953	70
1470	Cucumber	Straight Eight	80	1/1953	61	6/1953	80
16	Cabbage	Pierce Hardware Co., Taunton Red Acre, No. 9252	85	12/1952	53	3/1953	75
106	Onion	Saunders Hardware Co., Middleboro Yellow Globe Danvers, No. 8586 ..	90	12/1952	43	3/1953	70
788	Onion	Yellow Globe Danvers	70	1/1953	46	4/1953	70

FIELD TESTS OF VEGETABLE SEEDS

Type and Variety Studies

Conducted by the Seed Laboratory
Waldo C. Lincoln, Jr., Laboratory Assistant

This year is the eighteenth year that the Experiment Station has conducted tests to determine the trueness-to-type of various kinds of vegetable seed offered for sale in this State. Tests were conducted in the same manner as in former years except that a larger number of samples of each of fewer kinds were selected for testing. Kinds of seed selected consist of Sweet Corn, Radish and Summer Squash, for which the State Seed Inspector sampled a comprehensive collection of varieties and strains, consisting of 98 samples of Sweet Corn, 69 samples of Radish, and 30 samples of Summer Squash. These 197 samples of seed were taken at 30 retail establishments and represent the offerings of 28 seedsmen who wholesale seed in this State.

The Corn was hand-planted June 2, in ten-foot rows, and each sample was replicated at random in the field. Although growing conditions were extremely dry in this area, the seed plots did not suffer because of the heavy soil and the ability of the soil to retain moisture. This year, for the first time, the laboratory worked in conjunction with the United States Department of Agriculture at Beltsville, Maryland, and some 45 samples of hybrid Sweet Corn, representing only the inter-state sales, were also tested at the Plant Industry Center in Beltsville. Because of extreme drought the tests at Beltsville were a failure.

Only one sample of Corn was found incorrectly labeled. The remainder of the Sweet Corn conformed to type, which does not mean that all lots were of equal desirability. Seed Stocks found in the tests conformed to type but were not equally desirable, particularly in the early varieties of Spencross and Marcross.

Thirty samples of Summer Squash were planted on June 3. The planting procedure consisted of two hills of four plants each duplicated at random. Here again some seed stocks were more desirable than others, but only one sample was found to be mislabeled.

The 69 samples of radishes were planted in ten-foot rows in duplicate on June 3.

Conformity to type was the measure of comparison in the tests, and individual plants were called off-type when they could not be classified in a group of plants ranging fairly close to the type generally accepted as typical for the particular variety under consideration.

The results of all tests are listed in the following table.

Table 4
Field Tests of Vegetable Seeds

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	True to Type %	Remarks
Abbott & Cobb Co., Frankford, Pa.				
418	Radish	De Vincent Bros., Waltham Scarlet Globe Short Top, No. 193	95	5% Long tapered root
Joseph Breck & Sons, Inc., Boston, Mass.				
177	Radish	Cherry Belle	94	5% pink—1% French Breakfast Type
W. Atlee Burpee Co., Philadelphia, Pa.				
Checkerboard Feed Store, East Longmeadow				
995	Radish	Burpee's Early Scarlet Button, No. 877	97	3% purple
993	Squash	Summer Straightneck	75	25% Des Moines Type

Table 4
Field Tests of Vegetable Seeds (concluded)

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	True to Type %	Remarks
Comstock, Ferre & Co., Wethersfield, Conn.				
428	Radish	Frank Cardoza, New Bedford Early Scarlet Turnip White Tip	93	7%—2/3 white
Clark Hardware Co., Greenfield, Mass.				
1043	Radish	French Breakfast	94	4% purple—2% pink
Frederick W. Eberle, Albany, N. Y.				
616	Radish	De Vincent Bros., Waltham Cherry Belle, No. 996	96	4% pink flesh
628	Radish	Dominic Pizzi, Waltham Cherry Belle	97	3% pink
Chas. C. Hart Seed Co., Wethersfield, Conn.				
1000	Radish	General Appliances, Indian Orchard Early Scarlet Globe	92	6% purple—2% pink
D. Landreth Seed Co., Philadelphia, Pa.				
615	Radish	Smith Mills Hardware Co., No. Dartmouth Early Scarlet Globe	0	100% Scarlet Globe Short Top
Mandeville, King & Co., Rochester, N. Y.				
688	Radish	Schofield Hardware Co., No. Attleboro Scarlet Globe	28	3% purple—3% pink—66% poor root development—not marketable
Michael Leonard Seed Co., Chicago, Ill.				
936	Corn	Mutual Plumbing & Heating Co., Amherst Golden Cross	0	100% Iochief
Ross Bros. Co., Worcester, Mass.				
505	Radish	Early Scarlet Turnip, No. 3469	96	4% White Tip—poor root development
504	Radish	Early Scarlet Turnip White Tip	89	9%—2/3 white—2% heart shape
J. B. Rice, Jr., Co., Shusan, N. Y.				
1359	Radish	P. F. Elmer, Millers Falls White Icicle	70	30% Scarlet Globe Type
Joseph Sordillo & Sons, Boston, Mass.				
658	Radish	Long Red	94	6% White
657	Radish	Long White	0	100% Long Red
F. H. Woodruff & Sons, Milford, Conn.				
623	Radish	De Vincent Bros., Waltham Early Scarlet Globe Med. Top	—	Type satisfactory but poor root development
Farm Bureau, Assoc., Waltham				
544	Radish	Cavalier	95	3% purple—2% White Tipped
542	Radish	Scarlet Globe Medium Top	—	100% Scarlet Globe
General Mills, Fall River				
72	Radish	Scarlet Globe Medium Type, No. 2-312 C	95	4% white, pink and purple, 1% elongated root
Taunton State Hospital, Taunton				
S-123	Radish	Early Scarlet Globe Medium Top, No. 9-1104	72	28% Short Top
Wrentham State Hospital, Wrentham				
S-138	Radish	Cherry Bell, No. 2-432	93	5% pink, 1% purple, 1% white
S. D. Woodruff & Sons, Orange, Conn.				
689	Radish	Schofield Hardware Co., No. Attleboro Early Scarlet Globe	47	3% pink—50% vegetative growth only, not marketable
690	Radish	French Breakfast	91	6% Globe shape—2% pink 1% purple

STUDIES OF FLOWER SEEDS

Conducted by the Seed Laboratory
Waldo C. Lincoln, Jr., Laboratory Assistant

This is the eighteenth year in which flower seed studies have been conducted by the Seed Laboratory to determine the quality of flower seed offered for sale in various retail outlets. Seed of 392 lots, representing 65 genera, packeted by 26 wholesalers or distributors, were obtained from 149 retail sources by the Seed Inspector. All samples were given germination tests in the laboratory, but 70 samples were not tested in the field. One of these 70 was *Calonyction* (Moon-flower), one was *Ipomea* (Morning Glory), one *Azalea*, two *Lathyrus* (Sweet Pea), two perennials, and the remaining 63 samples, not tested in the field, were the very small seeded or the long germinating types.

The lots field-tested were distributed among the various genera as follows:

<i>Acrolinium</i>	1	<i>Cosmos</i>	17	<i>Martynia</i>	1
<i>Ageratum</i>	6	<i>Convolvulus</i>	1	<i>Mirabilis</i>	1
<i>Alyssum</i>	16	<i>Cynoglossum</i>	3	<i>Nemesia</i>	1
<i>Amaranthus</i>	2	<i>Dimorphotheca</i>	1	<i>Nicotiana</i>	5
<i>Anchusa</i>	2	<i>Dianthus</i>	2	<i>Papaver</i>	5
<i>Arctotis</i>	2	<i>Eschscholtzia</i>	12	<i>Phlox</i>	2
<i>Browallia</i>	1	<i>Euphorbia</i>	1	<i>Portulaca</i>	8
<i>Calendula</i>	14	<i>Gaillardia</i>	6	<i>Reseda</i>	2
<i>Calliopsis</i>	2	<i>Godetia</i>	4	<i>Scabiosa</i>	6
<i>Callistephus</i>	24	<i>Gypsophila</i>	3	<i>Statice</i>	1
<i>Celosia</i>	6	<i>Helianthus</i>	4	<i>Tagetes</i>	42
<i>Centaurea cyanus</i> ..	10	<i>Helichrysum</i>	4	<i>Tithonia</i>	3
<i>Centaurea imperialis</i> ..	1	<i>Hunnemannia</i>	1	<i>Tropaeolum</i>	17
<i>Clarkia</i>	5	<i>Iberis</i>	6	<i>Verbena</i>	9
<i>Cleome</i>	4	<i>Impatiens</i>	7	<i>Vinca</i>	1
<i>Cladanthus</i>	1	<i>Kochia</i>	1	<i>Zinnia</i>	48

Dates of sowing were June 4 and 5. Seeds were sown in twenty-foot sections in the row with the exception of *Alyssum*, *Iberis*, and *Portulaca*, which were sown in ten-foot sections. In most cases, the quantity of seed was sufficient to plant the desired section.

Germination tests were made in the laboratory for all samples of seed. The results of the laboratory germination are listed in Table 5 only for samples that gave few or no plants in the field or with good germination but found otherwise unsatisfactory.

The extreme dry weather during the entire period did not affect the trial grounds, since there was no sign of injury due to dryness throughout the entire testing period. Planting was delayed for about ten days because of unusually heavy rainfall prior to the planting season. The following table lists only those samples that were found in the field tests to differ in performance from that stated on the seed packet.

Table 5
Flower Seed Inspection

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected and Variety of Seed	Laboratory Germination %	Field Tests
				Performance
Joseph Breck & Sons, Boston, Mass.				
340	Calendula	Adams Hardware Co., Northboro Orange King	6	6% single flowered
249	Papaver	Allen Hardware Co., Saugus Double Shirley Mixed	87	4% single; 10 colors; mixture proportion satisfactory
401	Cleome	Joseph Breck & Sons, Boston Pink Queen	76	6% Lavender
403	Cosmos	Breck's Cupped	64	50% single, non-cupped type; 4 colors
412	Tagetes	Single French, Flaming Type	25	Type satisfactory
414	Zinnia	Canary Bird	80	3% White
417	Zinnia	Peppermint Stick	91	10% show no striping
269	Tagetes	Lowe Bros., Ipswich Guinea Gold	89	3% Yellow
W. Atlee Burpee Co., Philadelphia, Pa.				
358	Impatiens	Clinton Hdwe Co., Clinton Double Camellia Flowered Mixed ..	82	50% single; 7 colors
278	Dianthus	Herman Davis, Merrimac Single & Double Mixed	92	100% single; 5 colors
280	Zinnia	Floradale Scarlet	59	4% Yellow
784	Alyssum	Thomas J. Grey Co., Abington Little Gem	76	4% Tall White Type
1038	Verbena	Jacque Hardware Co., Milford Giant Mixed	58	90% Mayflower Pink; Color mixture poor
Comstock, Ferre & Co., Wethersfield, Conn.				
668	Impatiens	Joseph Sordillo & Sons, Boston Double Camellia Flowered Mixed ..	77	30% single; 7 colors
669	Portulaca	Double Mixed	83	5% single; 7 colors; mixture proportion good
Crosman Seed Corp., Rochester, N. Y.				
355	Centaurea	S. S. Kresge & Co., Fitchburg Red Boy	80	6% White
273	Impatiens	S. S. Kresge & Co., Newburyport Double Camellia Flowered Mixed ..	90	70% single; 5 colors
880	Cosmos	J. T. Tepper & Co., Northampton Double Anemone Flowered or Crested	87	20% single; No petal development or Anemone or Crested Type
Deerington Zinnia Gardens, Bangersville, Ind.				
893	Zinnia	F. W. Woolworth & Co., Chicopee Special Baby Bee Small Double Bloom Pink	80	Mixture of Red, Orange, Rose and Pink
Ferry-Morse Seed Co., Detroit, Mich.				
381	Papaver	A. L. Holden & Co., Milton American Legion	85	8% off color

Table 5
Flower Seed Inspection (continued)

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected and Variety of Seed	Laboratory Germination %	Field Tests
				Performance
Terry-Morse Seed Co.—(continued)				
841	Papaver	Thomas Hardware Co., Bedford All Double Shirley Mixed	91	10% single; 9 colors; good color mixture proportion
239	Alyssum	F. X. Robichaud, Methuen Little Gem	71	10% Tall White Type
261	Cleome	Whitcomb Carter Co., Beverly Pink Queen	83	3% Lavender
Fredonia Seed Co., Fredonia, N. Y.				
1003	Clarkia	City Market, Holyoke Double Mixed	58	Too few plants for Performance test
Germain's, Los Angeles, Cal.				
386	Tagetes	S. S. Kresge & Co., Quincy All Double Sunset Giants	90	10% single
Joseph Harris Co., Rochester, N. Y.				
34	Portulaca	Joseph Harris Co., Lexington Double Rose Flowered Mixed Colors	75	5% single; 7 colors; mixture proportion good
Chas. C. Hart Seed Co., Wethersfield, Conn.				
804	Calendula	Bowdoin Hardware Co., Walpole Orange King	35	25% mixed; Yellow, single Orange, and Salmon
244	Alyssum	Broadway Paint & Hardware Co., Everett Violet Queen	70	Very faded, not a true Violet Queen color
398	Tagetes	Chase Hardware Co., Dedham Harmony Hybrid	84	90% Dwarf Melody Type
1035	Zinnia	Costello Hardware Co., Milford Lilliput Pink	80	70% Rose color; 6% Orange; 3% Red
380	Scabiosa	Fains Flower Shop, Dorchester Mixed Mourning Bride	34	Too few plants for Performance test
858	Papaver	Lynde Hardware Co., Gardner Shirley Mixed	20	Too few plants for Performance test
205	Impatiens	Mendelsohn's Hardware Co., Waltham Choice Double Mixed	82	70% single; 9 colors
805	Iberis	Morse Paint & Supply Co., Wrentham Dwarf Hybrid Finest Mixed	0	
352	Callistephus	Sabourin Hardware Co., Fitchburg Giant Comet Choice Mixed Colors ..	85	3% Queen of the Market Type; 4 colors; good color proportion
1005	Cosmos	Street Supply Co., So. Hadley Radiance	32	Satisfactory
296	Zinnia	Town Paint & Supply Co., Arlington Orange Fantasy	71	2% not Fantasy Type
346	Centaurea	Wentworth Hardware Co., Ayer Double Blue Florists Strain	31	Satisfactory
348	Zinnia	Peppermint Stick	90	22% show no striping

Table 5
Flower Seed Inspection (continued)

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected and Variety of Seed	Laboratory Germination %	Field Tests
				Performance
Budd D. Hawkins, Reading, Vt.				
320	Calendula	L. Anderson & Son, Concord		
318	Iberis	Orange King	34	10% Lemon Queen
317	Impatiens	Dwarf Hybrid Finest Mixed	0	
		Double Camellian Flowered	65	60% single; 8 colors
Mandeville & King Co., Rochester, N. Y.				
1028	Alyssum	Herman Baker, Douglas		
		Royal Carpet	53	7% Tall White Type
235	Statice	H. Bruckman, Lawrence		
		Sea Lavender — All Colors .....	..	Insufficient seed for Official test Field Germination 0
Flynn's Hardware Co., Attleboro				
808	Celosia	Brilliant Red	75	2% Orange (Plume Type)
Rhodes Hardware Co., Wakefield				
216	Portulaca	All Colors Double	83	3% single; 9 colors; good mixture proportion
Salem Hardware Co., Salem				
259	Impatiens	Camellia Flowered	76	50% single; 6 colors
Northrup, King & Co., Minneapolis, Minn.				
334	Zinnia	Waite Hardware Co., Worcester		
		California Giant, Double Rose Enchantress	89	4% Deep Red; 4% White
F. W. Woolworth & Co., Adams				
874	Centaurea	Double Red	73	3% Blue
F. W. Woolworth & Co., Clinton				
363	Callistephus	Crego, Wilt Resistant Red	44	Type Satisfactory
F. W. Woolworth & Co., Easthampton				
1009	Clarkia	Double Mixed	53	Satisfactory; 2 colors
F. W. Woolworth & Co., Ipswich				
267	Ageratum	Imperial Dwarf Blue	60	6% Blue Perfection
F. W. Woolworth & Co., Medford				
291	Dimorphotheca	Mixed	34	Too few plants for Performance test
F. W. Woolworth & Co., Southbridge				
1020	Clarkia	Double Mixed	57	Too few plants for Performance test
F. W. Woolworth & Co., Watertown				
300	Papaver	American Legion	74	5% off color
Pelletized Seed Co., Wynnwood, Pa.				
828	Portulaca	F. W. Woolworth & Co., Fall River		
		Double Mixed Pelletized	45	Too few plants for Performance test
Rice Branch, Associated Seed Growers, Cambridge, N. Y.				
The Clapper Co., West Newton				
312	Godetia	Double Mixed	57	Too few plants for Performance test
315	Zinnia	Cherry Queen	95	4% Lavender
McClellan's Store, Canton				
396	Zinnia	Orange Oriole	85	3% Rose

Table 5
Flower Seed Inspection (concluded)

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected and Variety of Seed	Laboratory Germination %	Field Tests
				Performance
Rice Branch, Associated Seed Growers—(continued)				
1014	Calistephus	Roddiga Market, Fiskdale Heart of France	90	4% Purple
823	Impatiens	Smith Mills Hardware Co., Dartmouth Double Mixed	98	25% single; 8 colors
832	Eschscholtzia	Tree Land, Inc., Cambridge Extra Golden	80	3% White
875	Godetia	F. W. Woolworth & Co. Adams Double Mixed	65	Too few plants for Performance test
523	Cleome	Ross Bros. Co., Worcester, Mass. Pink Queen	93	2% Helen Campbell
306	Calendula	Sears, Roebuck & Co., Chicago, Ill. Sears, Roebuck & Co., Cambridge Orange King	78	100% Off Type; Persimmon Beauty Type
304	Zinnia	Cherry Queen	89	4% Lavender
376	Calendula	Sears, Roebuck & Co., Waltham Pacific Beauty Yellow	75	4% Orange
1030	Tagetes	Tru-Blum Seed Co., Avila, Cal. Centre Hardware Co., Uxbridge Sunset Giants Mixed	70	100% Orange-poor mixture
303	Tagetes	Vaughan's Seed Store, New York, N. Y. C. H. Symmes & Co., Winchester Dwarf French	76	6% Tall Type
827	Gaillardia	S. D. Woodruff & Sons, Inc., Orange, Conn. J. E. Amiot & Sons, Fall River Single Mixed	2	Too few plants for Performance test
323	Calendula	B. W. Brown Grain Co., Concord Double Flowering Finest Mixed	45	85% Yellow Type; poor mixture proportion
223	Clarkia	Bruce Hardware Co., Melrose Double Mixed	91	80% Red; 4 colors; poor mixture proportion
379	Cosmos	Fains Flower Shop, Dorchester Double Crested Mixed	96	No petal development; poor sample
254	Cosmos	Lynn Cycle & Hardware Co., Lynn Double Crested Peerless Mixed	36	25% single; 100% White
365	Tagetes	Town Line Hardware Co., Sudbury Yellow Supreme	87	3% Orange
208	Ageratum	Woburn Hardware & Plumbing Supply Co., Woburn Blue Perfection	57	90% Imperial Dwarf Blue Type
210	Tagetes	Glitters	58	20% Orange; 70% Yellow; Carnation Type
209	Zinnia	Canary Bird	59	3% Orange; 3% White; 3% Red

Table 6
Summary, by Wholesalers, of the Performance
of Flower Seeds in the Field

Seeds Packeted by	Total No. Samples Tested	No. Samples Satisfactory	No. Samples Unsatisfactory
Breck, Joseph, & Sons..... Boston, Mass.	66	58	8
Burpee, W. Atlee, Co. Philadelphia, Pa.	25	20	5
Comstock, Ferre & Co. Wethersfield, Conn.	3	1	2
Crosman Seed Corp. Rochester, N. Y.	19	16	3
Deerington Zinnia Gardens Bargersville, Ind.	2	1	1
Ferry-Morse Seed Co. Detroit, Mich.	36	32	4
Fredonia Seed Co. Fredonia, N. Y.	15	14	1
Germain's, Inc. Los Angeles, Cal.	2	1	1
Harris, Joseph, Co. Rochester, N. Y.	4	3	1
Hart, Charles C. Seed Co. Wethersfield, Conn.	44	31	13
Hawkins, Budd D. Reading, Vt.	6	3	3
Mandeville & King Co. Rochester, N. Y.	45	40	5
McLaughlin's Dishman, Washington	1	1	0
Northrup, King & Co. Minneapolis, Minn.	34	26	8
The Page Seed Co. Greene, N. Y.	2	2	0
Pelletized Seed Co. Wynnewood, Pa.	2	1	1
Rice Branch, Associated Seed Growers .. Cambridge, N. Y.	26	19	7
Rice, J. B., Jr., Co. Shushan, N. Y.	1	1	0
Ross Bros. Worcester, Mass.	11	10	1
Sears, Roebuck & Co. Chicago, Ill.	9	6	3
Sterling Seed Co. Minneapolis, Minn.	2	2	0
Tru-Bloom Seed Co. Avila, Cal.	2	1	1
Vaughan's Seed Store New York, N. Y.	5	4	1
Woodruff, F. H., & Sons Milford, Conn.	1	1	0
Woodruff, S. D., & Sons Orange, Conn.	29	20	9
	—	—	—
	392	314	78

Table 7

Summary, by Wholesalers, of the Total Number of Samples
Tested in the Seed Laboratory*

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled*	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Abbott & Cobb Co. Philadelphia, Pa.	1	1	0	.....	.....	.....	.....	.....	.....
Associated Seed Growers, Inc. Milford, Conn.	28	28	0	.....	.....	.....	1	0	1
Barrett Hardware Co. Fall River, Mass.	5	5	0	.....	.....	.....	.....	.....	.....
Belt Seed Co. Baltimore, Md.	.....	.....	.....	17	14	3	.....	.....	.....
Boston Market Gardner's Assoc. .. Boston, Mass.	2	2	0	.....	.....	.....	.....	.....	.....
Breck, Joseph, & Sons Boston, Mass.	47	47	0	1	1	0	1	1	0
Burpee, W. Atlee, Co. Philadelphia, Pa.	30	29	1	.....	.....	.....	.....	.....	.....
Clark Hardware Co. Greenfield, Mass.	4	4	0	.....	.....	.....	.....	.....	.....
Comstock, Ferre & Co. Wethersfield, Conn.	58	57	1	.....	.....	.....	1	1	0
Cone, Arthur R., Inc. Buffalo, N. Y.	9	9	0	67	64	3	4	4	0
Cover Grain Co. Baltimore, Md.	.....	.....	.....	.....	.....	.....	1	1	0
Cox, Charles M., Co. Boston, Mass.	.....	.....	.....	1	1	0	.....	.....	.....
Craver Dickinson Co. Buffalo, N. Y.	.....	.....	.....	2	1	1	.....	.....	.....
Crosman Seed Corp. Rochester, N. Y.	15	15	0	.....	.....	.....	.....	.....	.....
Dickinson, Albert, Co. Chicago, Ill.	.....	.....	.....	16	15	1	2	2	0
Eastern States Farmers' Exchange.. West Springfield, Mass.	45	45	0	17	17	0	2	2	0
Eberle, Frederick W. Albany, N. Y.	8	8	0	.....	.....	.....	.....	.....	.....
Ferry-Morse Seed Co. Detroit, Mich.	23	23	0	.....	.....	.....	.....	.....	.....
Forbes, Alexander, Co. Newark, N. J.	6	6	0	.....	.....	.....	.....	.....	.....
Fredonia Seed Co. Fredonia, N. Y.	13	12	1	.....	.....	.....	.....	.....	.....
Grey, Thomas J., Co. Boston, Mass.	10	7	3	.....	.....	.....	.....	.....	.....
Harris, Joseph, Co. Rochester, N. Y.	29	29	0	.....	.....	.....	.....	.....	.....
Hart, Charles C. Seed Co. Wethersfield, Conn.	66	58	8	1	1	0	1	1	0

* Complete analysis and germination of samples that are mislabeled are indicated in the preceding tables.

Table 7

Summary, by Wholesalers, of the Total Number of Samples
Tested in the Seed Laboratory (concluded)

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Whitney Seed Co. Buffalo, N. Y.				40	39	1	2	2	0
Woodruff, F. H., & Sons Milford, Conn.	183	181	2	2	1	1	2	2	0
Woodruff, S. D., & Sons Orange, Conn.	24	24	0	.....			1	1	0
Totals	820	798	22	267	245	22	42	35	7

Inspection of Commercial Feedstuffs

BY

Feed Control Service Staff

Massachusetts Agricultural Experiment Station



INSPECTION OF COMMERCIAL FEEDSTUFFS

By Feed Control Service Staff

John W. Kuzmeski, *Research Professor, Official Chemist*
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INTRODUCTION

In general, analytical results on official samples show that feed manufacturers were successful in maintaining the guarantees on the products sold in Massachusetts during the past season. Even in cases showing deficiencies in protein and fat or excessive fiber content the variations from guaranteed analysis were not great enough to cause serious economic loss to the purchaser.

When variations in drug content are considered, it is a different matter. The incorporation of small quantities of drugs in the proper amounts in feed occasionally is still a problem. Constant vigilance on the part of the feed manufacturer is necessary to prevent either excessive quantities of the drugs appearing in the feeds to which the drugs are being added or the unintentional appearance of the drugs in feeds for animals that may be particularly susceptible to poisoning by such drugs.

Moderate excess of most drugs used for the prevention or cure of poultry diseases is tolerated by poultry. Even great excess of some drugs causes no permanent harm if not fed for prolonged periods. However, some animals, particularly dogs, are affected seriously by some drugs, although the drugs are present only in the low quantities that are used in poultry feeding daily for long periods of time.

Therefore, when the same mixing system is used for manufacturing poultry, swine, and dog feeds, great care must be taken to insure that the mixing machinery is entirely free of poultry drugs before the feeds for other animals are mixed.

Also, since a part of the feed manufacturer's warehouse now resembles a concern manufacturing pharmaceutical products, a mistake in the choice of ingredients for a particular feed mixture is far more serious than it would have been a few years ago. Proper safeguards against such mistakes must be taken voluntarily by the feed manufacturer to avoid possible future legislative action restricting the use of certain drugs and other products in feeds.

Brands Substantially Complying with Guarantees

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number Sample Analyze
Acme-Evans Co., Inc.		Beacon Milling Co., Inc.	
Acme Yellow Hominy.....	1	Beacon "16".....	1
L. P. Adams Co.		Beacon Breeder All-Mash.....	1
Greylock Brand Laying Mash.....	1	Beacon C-C Pellets.....	1
Albers Milling Co.		Beacon Dairy Fitting Ration.....	1
Calf Manna.....	1	Beacon "22" Egg Mash.....	1
E. T. Allen Co.		Beacon Fleshing Pellets.....	1
Empire 41% Protein Cottonseed		Beacon Grower All-Mash.....	1
Meal.....	1	Beacon "18" Growing Mash.....	1
Allied Mills, Inc.		Beacon Market Egg All-Mash.....	1
June Pasture.....	1	Beacon Pig Grower.....	1
Wayne Calf Meal.....	1	Beacon "18" Test Cow Ration.....	1
*Wayne Calf Starter.....	1	Beacon "14" Test Cow Ration.....	1
Wayne 24% Dairy Feed.....	1	Beacon Turkey & Game Bird Fitting	
Wayne 20% Dairy Ration.....	2	Beacon Turkey and Game Bird	
Wayne 16% Dairy Ration.....	1	Grower.....	1
Wayne Egg Mash.....	2	Be-Co-Lass.....	1
Wayne 26% Egg and Breeder Sup-			
plement.....	1	Blatchford Calf Meal Co.	
Wayne Fattening Pellets.....	1	V-D.....	1
Wayne Fitting Ration.....	1	Borden Grain Co.	
Wayne Growing Mash.....	1	Borden's 14 Fitting.....	1
Wayne H-A-D Krums.....	1	Borden's Growing Feed.....	1
Wayne Horse Feed.....	2	Borden's Laying Mash.....	1
Wayne Mash Layer.....	1	Borden's Super Mash.....	1
Wayne Pork Maker.....	2	Borden's Super Starter and Broiler	
Wayne Rabbit Ration.....	1	Feed.....	1
Wayne Intermediate Scratch Feed..	1	Borden's Sweet 16 Dairy.....	1
Wayne Tail Curler.....	1	George B. Brown Corp.	
Wayne Tail Curler "Jr".....	1	Brown's Dairy Feed.....	2
Wayne Test Cow Ration.....	1	Brown's Egg Mash.....	2
Wayne Turkey Fitting Ration.....	1	Brown's Fitting Ration.....	1
Wayne Turkey Growing Mash.....	2	Brown's Growing Mash.....	2
Wayne Universal Breeder.....	1	Brown's Pig Feed.....	2
Wayne Universal Egg.....	3	Brown-Forman Distillers Corp.	
Wayne Universal Grower.....	1	BF Corn Distillers Dried Grains...	1
Wayne Universal Turkey Breeder		Buckeye Cotton Oil Co.	
Mash.....	1	Buckeye 44% Protein Solvent Ex-	
American Maize-Products Co.		tracted Soybean Oil Meal.....	2
Cream of Corn Gluten Feed.....	1	Central Soya Co., Inc.	
Arcady Farms Milling Co.		Central Star 44% Solvent Extracted	
Rockland Mouse Diet.....	1	Soybean Oil Meal.....	1
Rockland Rat Diet Complete.....	1	Coatsworth & Cooper, Ltd.	
Wonderfat Crate Fattener.....	1	C and C Wheat Bran.....	1
Wonderfat Station Feed.....	1	C and C Wheat Shorts.....	1
E. W. Bailey & Co., Inc.		Community Service, Inc.	
Pennant Brand Chick Starter.....	2	Community Complete Pig Feed.....	1
Pennant Brand Complete Egg Ration		Community 18% Dairy Ration.....	1
Pennant Brand 16% Dairy Ration		Community 16% Dairy Ration.....	1
(Coarse).....	1	Community Fitting Ration.....	1
Pennant Brand Complete Grower...	1	Community Growing Mash.....	1
Pennant Brand Fitting Ration		Community Laying Mash.....	1
(Coarse).....	1	Community Starter & Grower Mash	1
Pennant Brand Growing Mash.....	1	Connecticut Grains Corp.	
Pennant Brand Horse Feed.....	1	Dried Brewers Grains.....	2
Pennant Brand Laying Mash.....	2	Consolidated Products Co.	
Pennant Brand Pig Feed.....	1	Kaff-A.....	1
Pennant Brand Yankee 16 Dairy...	1	Consolidated Rendering Co.	
Barber & Bennett, Inc.		Corenco Feeding Bone Meal.....	2
Fort Orange 12% Fitting and Calf		Corenco Fish Meal.....	1
Grain Ration.....	1	*Corenco 47% Meat & Bone Scrap...	1
Fort Orange Laying Mash.....	1	Corenco 45% Meat & Bone Scrap...	2
Fort Orange 15% Test Ration.....	1		

* See also table of "Brands Not Conforming to Guarantee."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Copeland Flour Mills, Ltd.		Crawford 16% Milk Flow.....	2
Dandy Wheat Bran.....	1	Crawford Pig Grower-Fattener.....	1
Corn Products Refining Co.		Crawford Rabbit Pellets.....	2
Buffalo Brand Corn Gluten Feed...	1	Crawford Turkey Growing Mash...	1
Diamond Brand Corn Gluten Meal..	1	Crawford Turkey Marketing.....	1
Courcy & Sons Grain Co.		Dailey Mills, Inc.	
Courcy's Growing Mash.....	1	Double Diamond Broiler.....	1
Courcy's Laying Mash.....	1	Double Diamond Candy Horse Feed..	1
Cover Grain & Feed Co.		Double Diamond Complete Grower..	1
C & P Growing Mash.....	1	Double Diamond Complete Layer..	2
C & P Grade A Laying Mash.....	1	Double Diamond 14% Pelleted Fit-	
C & P Pig & Hog Feed.....	1	ting Ration.....	1
C & P Starter & Broiler Ration....	1	Double Diamond Hical Pork Pro-	
Chas M. Cox Co.		ducer.....	1
Wirthmore Breeder Mash.....	1	Double Diamond Hical 16% Test	
Wirthmore Calf Starter Meal.....	1	Ration.....	1
Wirthmore Calving Ration.....	1	Dawe's Laboratories, Inc.	
Wirthmore Challenger 20 Dairy		Dawe's 555 Broiler Base.....	2
Ration.....	1	Dawe's Swine Base.....	2
Wirthmore Challenger 16 Dairy		Dean & Lee	
Ration.....	1	Pathfinder Complete Laying.....	2
Wirthmore Challenger Coarse 14		Pioneer Dairy Ration 18.....	2
Dairy Ration.....	1	Pioneer Fitting Ration 14.....	2
Wirthmore Complete Breeder Ration	1	Decatur Soy Products Co.	
Wirthmore Complete Chick Starter	1	Illini Brand 41% Soybean Oil Meal—	
Wirthmore Complete Egg Ration...	1	Old Process, Expeller Type.....	1
Wirthmore Complete Growing Ration	1	Delaware Mills, Inc.	
Wirthmore 20 Dairy Ration.....	1	Delaware Complete Growing Mash...	1
Wirthmore 16 Dairy Ration.....	1	Delaware Complete Laying Mash...	1
Wirthmore Duck Fattening Ration...	1	Delaware Flushing Mash.....	1
Wirthmore Duck Growing Ration...	1	Delaware Sweet 16% Dairy Feed...	1
Wirthmore Duck Starter.....	1	Dewart Milling Co., Ltd.	
Wirthmore 14 Fitting Ration.....	1	Wheat Bran.....	1
Wirthmore Growing Mash.....	1	Frank Diauto	
Wirthmore Hi-Ener-G Breeder.....	1	Diauto's Fancy Pullet Grower.....	1
Wirthmore Hi-Ener-G Grower.....	1	Diauto's Regular Chick Starter.....	1
Wirthmore Hi-Ener-G Layer.....	1	Diauto's Special Egg Mash.....	2
Wirthmore Hog Grower.....	1	Dietrich & Gambrill, Inc.	
Wirthmore Horse Feed.....	1	D & G All Mash Breeder Ration....	1
Wirthmore Improved Hi-Ener-G		D & G All-Purpose Mash.....	1
Starter and Broiler Ration.....	1	D & G Breeder Mash.....	1
Wirthmore Laying Mash.....	1	D & G Fleshing Mash.....	1
Wirthmore Mink Feed.....	1	D & G Rabbit Feed Pelleted.....	1
Wirthmore Pig & Sow Feed.....	1	D & G Frederick 16% Dairy.....	1
Wirthmore Poultry Fitting.....	1	D & G Frederick Laying Mash.....	1
Wirthmore Poultry Flush.....	1	D & G Gambrill's Growing Mash...	1
Wirthmore Quickies.....	1	D & G Gambrill's Laying Mash....	1
Wirthmore Rabbit Pellets.....	1	Drackett Products Co.	
Wirthmore 18 Record Ration.....	1	Drackett 44% Protein Soybean Oil	
Wirthmore 16 Record Ration.....	1	Meal Solvent Extracted.....	1
Wirthmore Stock Feed.....	1	J. L. Dunnell & Son.	
Wirthmore Super Pellets.....	1	Excel 18% Dairy Ration.....	1
Wirthmore Turkey Fattening Ration	1	Excel Fitting Ration.....	1
Wirthmore Turkey Growing Ration	1	Excel Laying Mash.....	1
Wirthmore Twin Mix Calf Ration....	1	Starter and Grower-Horner's.....	1
Crawford Brothers, Inc.		E. I. du Pont de Nemours & Co.	
*Crawford Complete Chick Starter...	1	Two-Sixty-Two Feed Compound....	1
Crawford Complete Egg Mash.....	2	Eastern States Farmers' Exchange, Inc.	
Crawford Complete Growing Mash...	2	All Mash Developer.....	1
Crawford 20% Dairy Ration.....	2	All Mash Producer.....	1
Crawford Fattening Finishing Pellets	1		
Crawford Fitting Ration 14%.....	1		
Crawford Hi-Energy Starter & Broiler			
Mash.....	1		
Crawford Horse Feed.....	2		
*Crawford Laying Mash.....	1		

* See also table of "Brands Not Conforming to Guarantee."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Eastern States Farmers' Exchange, Inc. (Cont.)			
Breeder Mash.....	1	Complete Breeder Mash.....	1
Champion.....	1	Conditioner and Fleshing Mash.....	1
Developer.....	1	Dairy 20%.....	1
Finisher.....	1	Dairy 18%.....	1
Fitting Ration.....	1	16% Dairy Ration.....	1
Fulpail.....	1	15% Green Pasture Ration.....	1
Grasslander.....	1	High Energy Broiler and Starter Mash.....	1
Milkmore.....	1	Horse Feed.....	1
Pig Primer.....	1	Maternity Ration.....	1
Pork Builder.....	1		
Producer.....	1	Farmers Feed Co.	
36% Supplement.....	1	Bull Brand Dried Brewers Grains..	1
Sweepstakes.....	1		
Turkey-Grower.....	1	Feed Products, Inc.	
		Bestest Brand "Nature Sweet" Dried Citrus Pulp.....	1
Elmore Milling Co., Inc.		Bestest Brand "Nature Sweet" Dried Citrus Pulp (Late Production)..	1
Elmore Broiler Finishing Ration....	1		
Elmore Complete Growing Ration....	1	Fishery Products, Ltd.	
Elmore Complete Market Egg Mash....	1	Monroe Brand Fish Meal, 58%.....	1
Elmore Complete Rabbit Ration.....	1		
Elmore Dry and Freshening Ration....	1	Florida Citrus Canners Cooperative	
Elmore Egg Mash.....	2	Lake Wales Brand Citrus Pulp.....	1
Elmore Fitting Ration.....	2		
Elmore Flaked Pelleted Calf Starter....	1	Flory Milling Co., Inc.	
Elmore Game Bird Grower.....	1	Flory Golden Egg Layer Mash.....	1
Elmore Goat Ration.....	1	Flory 16% Grower Mash.....	1
Elmore Growing Mash.....	2	Flory Hi Broiler Mash.....	1
Elmore Horse Feed.....	1	Flory Hi-Efficiency All-Mash Layer....	1
Elmore Improved Calf Starter.....	1	Flory Hog Feed.....	1
Elmore M.A.C. Laying Mash.....	1	Flory Rabbit Pellets.....	1
Elmore Milk Grains "Sixteen".....	2	Flory Record 16% Dairy Feed.....	1
Elmore Pacemaker 18% Dairy Ration....	1	Flory Superior 16% Dairy Feed.....	1
Elmore Pacemaker 16% Dairy Ration....	1	Flory Superior 14% Fitting Ration..	1
Elmore Pacemaker Fitting Ration.....	1		
Elmore Super Broiler Ration.....	1	Fred A. Fountain	
Elmore Test Ration.....	1	Fountain's Breeder Mash.....	1
*Elmore Turkey Growing Mash.....	2	Fountain's Growing Mash.....	1
Elmore Turkey Starting Mash.....	1	Fountain's Laying Mash.....	1
John W. Eshelman & Sons		General Mills, Inc.	
Pennsy 16 Dairy Ration.....	1	Washburn's Gold Medal Hard Wheat Bran and Ground Screenings not exceeding mill run.....	1
Red Rose Calf Grower.....	1	Washburn's Gold Medal Hard Wheat Standard Middlings and Ground Wheat Screenings not exceeding mill run.....	1
Red Rose Fitting Ration.....	1	Washburn's Gold Medal Fancy Wheat Mixed Feed with Ground Screenings not exceeding mill run....	1
Red Rose Growing Mash.....	1		
Red Rose Laying Mash.....	1	General Mills, Inc., Farm Service Division	
Red Rose Starter & Grower.....	1	Farm Service Complete Layer Mash....	1
		Farm Service Complete Turkey Finisher.....	1
Essex County Co-operative Farming Assn.		Farm Service 16% Dairy Feed.....	1
S-X All-Mash Breeder.....	1	Farm Service Green Rabbit Pellets....	1
S-X All-Mash Egg.....	1	Farm Service 18% Grower Mash.....	1
S-X All-Mash Growing.....	1	Farm Service 20% Layer Mash.....	1
S-X Breeder Mash.....	1	Farm Service Roaster Finisher Mash....	1
S-X 18% Dairy Ration.....	1	Farm Service Turkey Grower Mash....	1
S-X Egg Mash.....	1		
S-X 14% Fitting Ration.....	1	General Mills, Inc., Larrowe Region	
S-X Growing Mash.....	1	Dried Beet Pulp.....	1
S-X Starter and Broiler.....	1	Larro Surebroiler 38.....	1
S-X Starter and Broiler Connecticut Formula.....	1	Larro Surebroiler 20.....	1
		Larro Surecalf.....	1
Evans Milling Co.		Larro Surecattle 32.....	1
Emco Hominy Feed.....	1		
Excelsior Milling Co.			
Camel Wheat Mixed Feed.....	2		
Farm Bureau Assn.			
22% Breeder Mash.....	1		
Breeder Mash 20%.....	1		
Chick Starter Mash.....	1		

* See a so table of "Brands Not Conforming to Guarantee."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
General Mills, Inc. Larrowe Region (Cont.)		Harco Growing Mash.....	1
Larro Surelay.....	1	Harco Horse Feed.....	1
Larro Surelay "Hi-Energy".....	1	Harco Laying Mash.....	2
Larro Surelitt.....	1	Harco Pig and Hog Meal.....	1
Larro Suremilk 32.....	1	Harco Rabbit Feed (Pelleted).....	1
Larro Suremilk 20.....	1	Harco Special Hi-Energy Broiler Mash.....	2
Larro Suremilk 16.....	1	Harco Test Cow Ration.....	2
Larro Suremilk 14.....	1	Top Profit Range Growing Mash...	1
Larro Surepoult.....	1		
Larro Surerabbit.....	1	H. P. Hood & Sons, Inc.	
Larro Sureturk.....	1	Hood's Calf Starter.....	1
Glidden Co., Feed Mill Div.		E. C. & W. L. Hopkins, Inc.	
Glidden Breeder Mash Concentrate.....	1	Granite State Chick Starter.....	1
Glidden Cattle Sweet.....	1	Granite State Complete Mash.....	1
Glidden Chick Concentrate.....	1	Granite State Complete Growing Mash.....	1
Glidden Hi-Flo 16.....	1	Granite State 16% Dairy Feed.....	1
Glidden Laying Mash Concentrate...	1	Granite State Fitting Ration.....	1
Glidden Co., Soya Products Div.		Granite State Hi-Energy Complete Breeder Mash.....	1
Glidden Quality 44% Protein Solvent Extracted Soybean Oil Meal....	1	Granite State Stock Feed.....	1
Globe By-Products, Inc.		J. William Horsey Corp.	
Globpro Brand Fish Meal.....	1	Dried Citrus Pulp.....	1
H. Grandin Milling Co.		Humphreys-Godwin Co.	
Grandin's Breeder Mash.....	1	Dixie Brand 41% Cottonseed Meal.....	1
Grandin's Complete Egg Mash.....	1	Illinois Cereal Mills, Inc.	
Grandin's 14 Fitting Ration.....	2	Hominy Feed.....	1
Grandin's Hi-Nutro Mash.....	2	International Milling Co.	
Grandin's Horse Feed.....	1	Blackhawk Wheat Germ Meal.....	1
Grandin's Laying Mash.....	1	Blackhawk Wheat Standard Midd- lings with Ground Wheat Screen- ings not exceeding mill run....	1
Grandin's 20 Milk Maker.....	1	Jaquith & Co., Inc.	
Grandin's 16 Milk Maker.....	1	Jaquith 16% Complete Layer Mash.....	1
Grandin's Start-to-Finish Mash.....	2	Jaquith Growing Mash.....	1
Grandin's Super Starter & Broiler Ration.....	1	Jaquith High Efficiency Laying Mash.....	1
Grandin's Ten-Hi Broiler Ration....	1	Jaquith Horse Feed.....	1
Grandin's 18 Test Ration.....	1	Jaquith 20% Laying Mash.....	1
Grandin's Twin Six Dairy Feed.....	1	Jaquith Laying Mash 19%.....	1
Heat Atlantic & Pacific Tea Co.		Jaquith Swine Growing & Fattening Feed.....	1
Daily-Egg Laying Mash.....	1	Jaquith Turkey Growing Pellets....	1
Daily-Growth Growing Mash.....	1	Kansas Flour Mills Co.	
Hess & Hunter Co.		Big Flake Pure Wheat Bran.....	1
Pioneer 18 Dairy.....	1	Kasco Mills, Inc.	
Pioneer Dry & Freshening.....	1	Kasco All Mash Grower Ration.....	1
Pioneer Pelleted Flaked 18 Dairy....	1	Kasco All Mash Layer Ration.....	1
Pioneer Pelleted Flaked 15 Dairy....	2	Kasco Body Builder.....	1
Red Comb All-Mash Layer.....	1	Kasco Egg Producer.....	1
Red Comb Broiler Crate Fattener....	1	Kellogg Co.	
Red Comb Crate Fattener.....	1	Kellogg's Hominy Feed.....	2
Red Comb Turkey Finisher Pellets..	1	Spencer Kellogg & Sons, Inc.	
Red Comb Turkey Grower.....	1	32% Protein Old Process (Expeller) Linseed Oil Meal.....	1
Harbeck & Sons		Kronick's Coal & Grain Co.	
Velcome Dairy Feed.....	2	Kronick's Dairy Ration 16%.....	1
Velcome Egg Mash.....	2	Kronick's Egg Mash.....	1
Velcome Growing Mash.....	2	Kronick's Starter-Grower Mash.....	1
Velcome Starter and Broiler Mash...	2		
Harper Feed Mills, Inc.			
Exchange Laying Mash.....	1		
Green Pasture 18% Dairy Ration....	1		
Harco Broiler Mash.....	2		
Harco Calving Ration.....	1		
Harco Complete Growing Ration....	1		
Harco Complete Starter-Broiler Ration.....	1		
Harco Dairy Fitting Ration.....	1		

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Kuder Pulp Sales Co.		Moon 16% Test Ration.....	1
Kuder Dried Citrus Pulp High Sugar	1	Moon Turkey Grower Mash.....	1
Kuder Dried Citrus Pulp High Sugar		Moon U.S. 20% Dairy Ration.....	1
Late Production.....	1	Moon U.S. 16% Dairy Feed.....	1
Lake of the Woods Milling Co., Ltd.		Jas. F. Morse & Co.	
Lakewood Wheat Bran.....	1	Morse's 50% Meat & Bone Scraps..	1
McMillen Feed Mills		Morse's 45% Meat & Bone Scraps..	1
Master Mix Breeder Concentrate...	1	Mowat Wilson & Co.	
Master Mix Broiler Concentrate....	1	Dominion Dried Beet Pulp.....	1
Master Mix Chick Concentrate.....	2	National Biscuit Co.	
Master Mix 36% Dairy Concentrate	1	Pure Wheat Bran.....	1
Master Mix Egglac Pellets.....	1	National Distillers Products Corp.	
Master Mix Layer Concentrate.....	1	Nadrisol Brand Corn Distillers Dried	
Master Mix Turkey Concentrate....	1	Solubles.....	2
Master Mix Waylac.....	1	Ogden Grain Co.	
Mansfield Milling Co.		Ogden Biddy Mash.....	2
Money's Worth Complete Mash....	1	Ogden Complete Starter Grower	
Money's Worth Complete Growing ..	1	Layer Breeder.....	2
Money's Worth Dairy Feed 16%....	1	Ogden 16% Dairy Feed.....	2
Money's Worth Fitting Ration.....	1	Ogden Fitting Ration.....	2
Money's Worth Growing Mash.....	1	Ogden Growing Mash.....	1
Money's Worth Laying Mash.....	1	Ogden Hi-Energy Starter & Broiler	1
Money's Worth Rabbit Pellets.....	1	Ogden Laying Mash.....	1
Money's Worth Starter.....	1	Ogden Poultry and Turkey Fitting	
Money's Worth Turkey Fattener....	1	Ration.....	1
Maritime Milling Co., Inc.		Ogden Rabbit Pellets.....	1
B-B Complete Growing Ration.....	1	Ogden Super Pig Ration.....	1
B-B Complete Laying Ration.....	1	Palm Grain Co.	
B-B Complete Rabbit Feed.....	1	Palm's Complete Mash.....	1
B-B Dry & Fresh Cow Fitting Ration	1	Park & Pollard Co., Inc.	
B-B Fitting Ration.....	1	Lay or Bust All Mash Layer.....	1
B-B Horse Feed.....	1	Lay or Bust Egg Mash.....	1
B-B Starter & Broiler Ration.....	1	Lay or Bust Growing Feed.....	2
B-B Ma-Co Complete Growing Ration	1	Lay or Bust Hi-Power Broiler Ration	1
B-B Ma-Co Complete Laying Ration	1	Lay or Bust Hi-Valu Pellets.....	1
tion 18%.....	1	Lay or Bust Laying Pellets.....	1
B-B Ma-Co Complete Laying Ration	1	Milk Maid Bulky Sweet Dairy.....	1
tion 16%.....	1	Milk Maid 20% Dairy Ration.....	1
B-B Ma-Co Conditioning Mash.....	2	Milk Maid 16% Dairy Ration.....	1
B-B Ma-Co Egg Mash.....	1	Milk Maid Dri-Fresh Ration.....	1
Marmico 16% Protein Dairy Feed..	1	Milk Maid Fitting Ration.....	1
Merrimack Farmers' Exchange, Inc.		Park & Pollard Go-Tu-It Pig & Hog	
Merrimack Calf Starter and Growing		Ration.....	1
Ration.....	1	Park & Pollard Rabbit Pellets.....	1
Merrimack Complete Grower.....	1	Park & Pollard Stock Feed.....	1
Merrimack 16% Dairy Ration.....	1	Red Ribbon 18% Dairy Ration.....	1
Merrimack 16% (Fine) Dairy Ration	1	Red Ribbon 16% Dairy Ration.....	1
Merrimack 14% Fitting Ration.....	2	Yankee Horse Feed.....	1
Merrimack Fodder Ration.....	1	George H. Parker Grain Co.	
Merrimack Laying Mash.....	1	Bill McHugh's Horse Feed.....	2
Methuen Grain Co., Inc.		Parker's Complete Hog Grower....	1
Umpire All-Mash Grower.....	1	Parker's Growing Mash.....	1
Umpire All-Mash Layer & Breeder..	1	Parker's High A 14% Fitting Ration	2
Miner-Hillard Milling Co.		Parker's Layer-Breeder Mash.....	2
Choice Steam Cooked Hominy Feed	1	Pasco Packing Co.	
Geo. Q. Moon & Co., Inc.		Sugar-Sweet Citrus Pulp.....	1
Moon Complete Growing Mash....	1	Patent Cereals Co.	
Moon Complete Laying Mash.....	1	Hominy Feed.....	1
Moon Dairy Fitting Ration.....	1	Phenix Milling Co., Ltd.	
Moon Laying Mash.....	1	Phenix Wheat Bran.....	1
Moon N. E. Complete Growing Mash	1	Phenix Wheat Shorts.....	1
Moon N. E. Complete Laying Mash	1		
Moon Rabbit Pellets.....	1		
Moon Special A 16% Dairy Ration.	1		

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Pillsbury Mills, Inc.		Ryther & Warren Co.	
Pillsbury's Hard Wheat Bran with Ground Wheat Screenings not exceeding mill run.....	2	Blue Tag Dairy Ration.....	2
R. C. Pratt & Co., Ltd.		Minot Egg Mash.....	1
Ruler Brand Pure Wheat Bran.....	1	Schenley Distillers, Inc.	
Ruler Brand Pure Wheat Shorts....	1	Schenley's Soludri.....	1
Quaker Oats Co.		Sea Board Supply Co.	
Ful-O-Pep Chick Starter.....	1	Crab Meal.....	1
Ful-O-Pep Dairy Feed.....	1	B. T. Smith Concentrates, Inc.	
Ful-O-Pep Egg-Breeder Mash.....	2	Citrus Pulp.....	1
Ful-O-Pep Fitting Feed.....	1	Southern Fruit Distributors, Inc.	
Ful-O-Pep Growing Mash.....	1	Bluebird Citrus Pulp.....	2
Ful-O-Pep Laying Mash.....	1	A. E. Staley Manufacturing Co.	
Ful-O-Pep Pork Ration.....	1	Hi-Pro-Con 50% Protein Dehulled Solvent Extracted Soybean Oil Meal.....	1
Ful-O-Pep Super Greens.....	1	Staley's 44% Protein Solvent Ex- tracted Soybean Oil Meal.....	1
Ful-O-Pep Turkey Grower.....	1	Swansea Grain Co.	
Quaker 16% Protein Dairy Feed....	1	Swansea Quality All Mash Grower..	1
Quaker Sugared Schumacher Feed..	1	Swansea Quality All Mash Layer....	1
Ralston Purina Co.		Swansea Quality Breeder Mash.....	1
Northeastern 16% Special Dairy....	1	Swansea Quality Broiler Ration Super	1
Purina B & M Cow Chow.....	1	Swansea Quality Laying Mash.....	2
Purina Breeder Layena E.....	1	Swansea Quality Turkey Grower....	1
Purina Bulky Las.....	1	Taft Bros.	
Purina Calf Startena E.....	1	Taft Laying Mash.....	1
Purina Chick Growena E.....	1	Taunton Grain Co.	
Purina Chick Growing Chow E.....	1	Balanced Ration.....	1
Purina Chicken Fatena Checkers E..	1	Fitting Ration.....	1
Purina Chowder.....	1	Growing Mash.....	1
Purina Complete Sow & Pig Chow E..	1	Laying Mash.....	1
Purina Cow Chow Concentrate.....	1	United Cooperative Farmers, Inc.	
Purina Cow Chow 18%.....	1	UCF All Mash Breeder.....	8
Purina Cow Chow 16%.....	1	UCF All Mash Grower & Layer....	7
Purina Cow Chow 14%.....	1	UCF Breeder.....	2
Purina D & F Chow E.....	1	UCF Broiler Mash.....	1
Purina Duck Growena E.....	1	UCF Calf Starter.....	1
Purina Duck Startena E.....	1	UCF Calving Ration.....	1
Purina Flock Chow E.....	1	UCF 16% Dairy.....	3
Purina Game Bird Growena E.....	1	UCF Egg Mash.....	1
Purina Game Bird Startena E.....	1	UCF Fitting Ration.....	1
Purina Goat Chow E.....	1	UCF Grower.....	1
Purina Hog Fatena E.....	1	UCF Horse Feed.....	1
Purina Lay Chow E.....	1	UCF Layer.....	10
Purina Layena E.....	1	UCF Milkmaker.....	1
Purina Mink Chow.....	1	UCF Mix Feed.....	1
Purina Omolene.....	1	UCF Pig & Hog Feed.....	1
Purina Pig Startena E.....	1	UCF Poultry Fattening Ration.....	1
Purina Poultry Booster Chow E.....	2	UCF Stock Feed.....	1
Purina Rabbit Chow Checkers E.....	1	UCF 16% Super Dairy.....	1
Purina Range Checkers E.....	1	UCF Super Starter.....	3
Purina Rooster Chow.....	1	UCF Turkey Grower & Fattener....	1
Purina Turkey Fatena E.....	1	Unity Feeds, Inc.	
Purina Turkey Growena E.....	1	Breeder Mash.....	1
John Reardon & Sons		Complete Market Egg Mash.....	1
Register Brand Fish Meal 60%.....	1	Complete Rabbit Pellets.....	1
Register Brand 45% Protein Meat and Bone Scrap.....	2	20% Dairy Ration.....	1
D. F. Riley		16% Dairy Ration.....	1
Riley's 16% Dairy Ration.....	2	Dairy and Fitting Ration.....	1
Riley's 14% Fitting Ration.....	1	High Energy Breeder Mash.....	1
Riley's 18% Laying Mash.....	2	High Energy Laying Mash.....	1
Russell Miller Milling Co.		Improved Calf Ration.....	1
Hard Wheat Occident Bran.....	1	Laying Mash.....	1
Hard Wheat Occident Standard Mid- dlings with Ground Wheat Screenings not exceeding mill run	1	Pig & Hog Ration.....	1

Brands Substantially Complying with Guarantees—(Concluded)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Ventura Grain Co.		Blue Seal Horse Feed.....	1
Every-Day Complete Grower & Layer Mash.....	2	Blue Seal Pig Feed.....	1
Every-Day Dairy 22%.....	1	Blue Seal Rabbit Pellets.....	1
Every-Day 20% Dairy.....	2	Blue Seal Succulent Feed and Calv- ing Ration.....	1
Every-Day 16% Dairy.....	3	Blue Seal Super All-Mash Egg Ration	2
Every-Day 14% Fitting.....	2	Blue Seal Super All-Mash Growing Ration.....	1
Every-Day Grower Mash.....	1	Blue Seal Super Mash.....	1
Every-Day Layer-Breeder Mash.....	2	Blue Seal Super Starter and Broiler	1
Every-Day Turkey Grower.....	1	Blue Seal Test Ration.....	2
		Blue Seal Turkey Growing.....	1
Victory Mills, Ltd.		Whitmoyer Laboratories, Inc.	
Veeline Soybean Oil Meal.....	2	Whitmoyer Quality Fish Meal 60%	1
C. P. Washburn Co.		Wilson's Corn Products, Inc.	
Made Right Breeder.....	1	Wilson Hominy Feed.....	1
Made Right Complete Growing Feed	1		
Made Right Complete Layer.....	1	Wirthmore Grain Co.	
Made Right 16% Dairy.....	1	Bliss Dairy Ration.....	1
Made Right Growing Feed.....	1	Preferred Complete Growing Ration	1
Made Right High Energy Breeder Mash.....	1	Preferred Complete Laying Ration..	1
Made Right High Energy Broiler..	1	Preferred Growing Mash.....	1
Made Right Horse Feed.....	1	Preferred Laying Mash.....	1
Made Right Laying Mash.....	1	Preferred Starter & Broiler Ration..	1
Made Right Starter.....	1	Preferred Turker Starter & Grower	1
Made Right Stock Feed.....	1	Wood's 16% Dairy Feed.....	1
		Wood's Stock Feed.....	1
H. K. Webster Co.		Worcester Grain & Coal Co.	
Blue Seal Breeder's Mash.....	1	F-Ish-N-C Hog Grow.....	1
Blue Seal "16" Dairy Ration (Coarse)	1	Just Right 16% Dairy Feed.....	2
Blue Seal Economizer "16".....	1	Just Right Growing Mash.....	2
Blue Seal Egg Mash.....	1	Just Right Laying Mash.....	1
Blue Seal Fattening Pellets.....	1		
Blue Seal Fitting Ration.....	1		
Blue Seal Growing Mash.....	1		

Brands Not Conforming to Guarantees

This table includes brands that are one percent or more under guarantee in protein or one-and-one-half percent or more over guarantee in fiber.

Manufacturer and Brand	Protein		Fiber		Ash
	Found	Guar- anteed	Found	Guar- anteed	
L. P. Adams Co. Greylock Brand 16% Dairy Feed.....	13.0	16	7.8	10	—
Allied Mills, Inc. *Wayne Calf Starter.....	14.5	16	6.5	9	6.7
Consolidated Rendering Co. *Corenco 47% Meat & Bone Scrap.....	45.3	47	—	—	37.1
Crawford Brothers, Inc. *Crawford Complete Chick Starter.....	18.8	20	—	—	—
*Crawford Laying Mash.....	18.8	20	—	—	—
Eastern States Farmers' Exchange, Inc. Hen Supplement.....	34.0	36	—	—	—
Elmore Milling Co., Inc. Elmore Turkey Fitting Ration.....	11.0	12	—	—	—
*Elmore Turkey Growing Mash.....	18.0	20	—	—	—
Jaquith & Co., Inc. Jaquith 20% Dairy Ration.....	18.8	20	—	—	—
McMillen Feed Mills Master Mix Calf Concentrate.....	24.4	26	—	—	—
Mansfield Milling Co. Money's Worth 20% Dairy Feed.....	19.0	20	—	—	—
Maritime Milling Co., Inc. Hi-Test Dairy Feed.....	18.9	20	—	—	—
Park & Pollard Co., Inc. Milk Maid Goat Feed.....	14.7	16	6.2	9	—
Quaker Oats Co. Quaker High Sweet Blend.....	5.2	5	22.4	16	7.0
Ralston Purina Co. Dairy Premix.....	38.1	36	7.6	6	—

* See also table of "Brands Substantially Complying with Guarantees."

Brands Containing Drugs

These brands substantially complied with guarantees of protein, fat and fiber.

Manufacturer and Brand	Sulfaquinoxaline	
	Found	Guaranteed
E. W. Bailey & Co., Inc. Pennant Chick Starter.....	0.0133	0.0175
Beacon Milling Co., Inc. Beacon S. Q. Control Mash Base.....	0.059	0.1
George B. Brown Corp. Brown's Hi-Energy Broiler Ration.....	0.005	0.0175
Chas. M. Cox Co. Wirthmore Complete Chick Starter.....	0.012	0.0125
Wirthmore Improved Hi-Ener-G Starter and Broiler Ration.....	0.0155	0.0175
Wirthmore Hi-Ener-G Grower.....	0.012	0.0125
Wirthmore Poultry Mash Base.....	0.102	0.1
Wirthmore Poultry Mash Base.....	0.074	0.1
Wirthmore Turkey Starter.....	0.015	0.0175
Dietrich & Gambrell, Inc. D & G Gambrell's Chick Starter.....	0.013	0.0125
D & G Gambrell's Chick Starter.....	0.013	0.0125
Eastern States Farmers' Exchange, Inc. Minuteman.....	0.043	0.05
Turkey-Starter Crumbles.....	0.0155	0.0175
Elmore Milling Co., Inc. Elmore Chixsaver.....	0.011	0.015
Elmore Super Broiler Ration.....	0.021	0.015
Essex County Co-operative Farming Ass'n. S-X All-Mash Growing.....	0.013	0.0125
S-X Starter and Broiler Ration.....	0.0175	0.0175
S-X Starter and Broiler Ration Connecticut Formula.....	0.015	0.0175
Farm Bureau Ass'n. Turkey Starter....	0.014	0.0175
Flory Milling Co., Inc. Flory Hi Broiler Medimash 175.....	0.014	0.0175
D. H. Grandin Milling Co. Grandin's Super Starter & Broiler Ration.....	0.016	0.0175
Jaquith & Co., Inc. Jaquith High Efficiency Starter Mash.....	0.024	0.0125
McMillen Feed Mills Master Mix Broiler Concentrate.....	0.0224	0.0375
Master Mix Broiler Concentrate.....	0.017	0.0375
Maritime Milling Co., Inc. B-B Ma-Co Broiler Ration.....	0.034	0.05
Merrimack Farmers' Exchange, Inc. Merrimack Fast-Gro Starter and Broiler.....	0.012	0.0175
Geo. Q. Moon & Co., Inc. Moon Complete Starter & Broiler Mash.....	0.010	0.0125
Ogden Grain Co. Ogden Hi-Energy Starter & Broiler.....	0.021	0.015
Ogden Hi-Energy Starter & Broiler.....	0.018	0.0175
Ogden Turkey Starter.....	0.018	0.0175
Park & Pollard Co., Inc. Lay or Bust All-Mash Grower.....	0.018	0.0175
Lay or Bust Chick Starter.....	0.020	0.0175
Lay or Bust Hi-Power Broiler Ration.....	0.0186	0.0175
Hi-Prime Turkey Starter.....	0.018	0.0175
Ralston Purina Co. Purina SQ Mixture.....	0.044	0.05

Brands Containing Drugs (Continued)

Manufacturer and Brand	Sulfaquinoxaline	
	Found	Guaranteed
United Cooperative Farmers, Inc.		
UCF Broiler Mash	0.013	0.0175
UCF Super Starter	0.012	0.0150
C. P. Wasbburn Co.		
Made Right High Energy Broiler	0.013	0.015
Made Right Starting Feed	0.018	0.015
H. K. Webster Co.		
Blue Seal Super Starter & Broiler	0.016	0.0175
Blue Seal Super All-Mash Growing Ration	0.018	0.0175
Blue Seal ORO Medic-Aid	0.015	0.0175
Blue Seal SQ Medic-Aid	0.081	0.1
Blue Seal Super All-Mash Growing Ration	0.014	0.0125
Blue Seal Super Starter and Broiler	0.016	0.0175
	Nitrophenide	
	Found	Guaranteed
Eastern States Farmers' Exchange, Inc.		
All-Mash Developer-WN	0.0134	0.01875
Fred A. Fountain		
Fountain's Improved High Energy Starter-Broiler Ration	0.015	0.01875
Glidden Co., Feed Mill Div.		
Glidden Super Broiler Concentrate	0.043	0.045
Kasco Mills, Inc.		
Kasco Broiler-Starter Ration	0.017	0.022
Lederle Laboratories Div., American Cyanamid Co.		
Megasul 25%	25.0	25.0
Megasul 25%	24.2	25.0
Megasul 25%	24.8	25.0
Swansea Grain Co.		
Swansea Quality Broiler Ration Super	0.017	0.02
Unity Feeds, Inc.		
Advance Ration	0.018	0.015
Super-Gro Ration	0.014	0.02
H. K. Webster Co.		
Blue Seal Chick Starter	0.019	0.025
Blue Seal Chick Starter	0.018	0.025
Wirthmore Grain Co.		
Preferred Starter & Broiler Ration	0.009	0.0125
	3-Nitro-4-Hydroxy-phenylarsonic Acid	
	Found	Guaranteed
Allied Mills, Inc.		
Wayne Rocket Broiler Feed	0.0057	0.005
Wayne Rocket Broiler Feed	0.006	0.005
Wayne Turkey Starter	0.0042	0.005
Ralston Purina Co.		
Purina Broiler Chow E.	0.0042	0.005
Purina Broiler Chow Finisher E.	0.0044	0.005
Purina Broiler Chow Finisher E.	0.0044	0.005
Purina Broiler Chow Finisher E.	0.005	0.005

Brands Containing Drugs—(Continued)

Manufacturer and Brand	Nitrophenide		Arsanilic Acid	
	Found	Guar- anteed	Found	Guar- anteed
Beacon Milling Co., Inc.				
Beacon Broiler Feed.....	0.019	0.025	0.011	0.0094
Beacon Broiler Feed.....	0.018	0.025	0.011	0.0094
Beacon Complete Starter.....	0.0193	0.025	0.010	0.0094
Beacon Complete Starter.....	0.019	0.025	0.012	0.0094
Delaware Mills, Inc.				
Delaware Broiler Mash.....	0.014	0.0187	0.012	0.0095
Maritime Milling Co., Inc.				
B-B Ma-Co Broiler Ration.....	0.038	0.025	0.018	0.01
B-B Ma-Co Broiler Ration.....	0.028	0.025	0.013	0.01
B-B Ma-Co Broiler Ration.....	0.018	0.025	0.012	0.01
B-B Ma-Co Broiler Ration.....	0.023	0.025	0.013	0.01
B-B Ma-Co Broiler Ration.....	0.021	0.025	0.012	0.01
Unity Feeds, Inc.				
Super-Gro Ration.....	0.018	0.0187	0.010	0.0095
Super Ration.....	0.17	0.0187	0.105	0.0095
Super Ration.....	0.014	0.0187	0.011	0.0095
Super Ration.....	0.018	0.0187	0.011	0.0095
			4-Nitrophenyl- arsonic Acid	
			Found	Guar- anteed
General Mills, Inc., Larowe Region				
Larro Surepoult.....			0.027	0.025
Ralston Purina Co.				
Purina Turkey Fatena.....			0.026	0.025
Purina Turkey Growena.....			0.025	0.025
	Nitrophenide		3-Nitro-4-Hydroxy- phenylarsonic Acid	
	Found	Guar- anteed	Found	Guar- anteed
Ralston Purina Co.				
Purina Broiler Chow Finisher E.....	0.018	0.02	0.0064	0.005
Purina Broiler Chow Starter E.....	0.023	0.02	0.0033	0.005
Purina Broiler Chow Starter E.....	0.018	0.02	0.005	0.005
			Amino Nitrothiazole	
Flory Milling Co., Inc.				
Flory Blackhead Preventive.....			0.042	0.05
Hales & Hunter Co.				
Red Comb Enheptin Mix.....			0.090	0.10
Ogden Grain Co.				
Ogden Turkey Grower & Developer.....			0.043	0.05

Brands Containing Drugs—(Continued)

	Sulfaquinoxaline		3-Nitro-4-Hydroxy-phenylarsonic Acid	
	Found	Guar- anteed	Found	Guar- anteed
Allied Mills, Inc.				
Wayne Chick Starter.....	0.013	0.0125	0.0044	0.005
Wayne Rocket Broiler Feed.....	0.017	0.0175	0.0057	0.005

	Nitrofurazone		Arsanilic Acid	
	Found	Guar- anteed	Found	Guar- anteed
General Mills, Inc., Larrowe Region				
Larro Surebroiler.....	0.0061	0.0055	0.011	0.01
Larro Surebroiler Starter.....	0.0051	0.0055	0.011	0.01

	Nitrofurazone	
	Found	Guar- anteed
General Mills, Inc., Larrowe Region		
Larro Surechick.....	0.0050	0.0055

	Arsanilic Acid	
	Found	Guar- anteed
Ogden Grain Co.		
Ogden Hi-Energy Growing Mash.....	none	0.0040

	Sulfaquinoxaline		Arsanilic Acid	
	Found	Guar- anteed	Found	Guar- anteed
Ogden Grain Co.				
Ogden Hi-Energy Growing Mash.....	0.015	0.0175	0.0005	0.004

	Sulfaquinoxaline		Sodium Arsanilate	
	Found	Guar- anteed	Found	Guar- anteed
Chas. M. Cox Co.				
Wirthmore Complete Chick Starter.....	0.012	0.0175	0.013	0.0088

	Sulfanilamide Derivative		3-Nitro-4-Hydroxy-phenylarsonic Acid	
	Found	Guar- anteed	Found	Guar- anteed
Dietrich & Gambrill, Inc.				
D & G Special Broiler Mash.....	0.032	0.030	0.010	0.009

Brands Containing Drugs—(Concluded)

H. K. Webster Co. Blue Seal PN Medic-Aid.		Phenothiazone		
		Found	Guar- anteed	
		0.48	0.5	
Ralston Purina Co. Purina Check R Aid E.....	Para-aminobenzoic Acid	Nitrophenide		
	Found	Guar- anteed	Found	Guar- anteed
	0.081	0.1	0.022	0.02

Oat Products

Manufacturer and Brand	Protein		Fiber		Ash	Results of Microscopic Examination
	Found	Guaranteed	Found	Guaranteed		
W. Bailey & Co. Pennant Brand Ground Oats	11.4	12	9.1	12	2.8	As represented
Canadian Grain Products, Ltd. Golden Harvest Pulverized White Oats	8.6	—	20.6	—	—	A mixture of ground oats and oat hulls
Pughboy Industries, Inc. New-Rich Pulverized White Oats	{ 11.4 11.7 11.1	{ 11 11 11	{ 13.5 12.3 12.8	{ 13 13 13	{ 4.7 4.8 4.4	Sample appears to be ground grain screenings
Blenders Pulverized White Oats	10.9	10	15.1	15	5.1	Grain screenings from oats
Sambeau Milling Co. Oat Mill Feed	5.2	3.5	—	32.5	—	As represented
Quen Milling Co. Fruen's Mixers' Pulverized White Oats	10.1	10	14.9	15	4.7	Contains added oat hulls
L. Hogg, Ltd. Ground Oats	10.7	—	—	—	—	As represented
C. & W. L. Hopkins, Inc. Fine Ground Oats	11.0	—	—	—	—	As represented
John Jervis Grain Co., Ltd. Ground Oats	{ 10.7 11.2 10.4	{ — — —	{ — — —	{ — — —	{ — — —	As represented
Wm. Knechtel & Son Oat Chop	10.6	—	9.9	—	2.6	As represented
Herrimack Farmers' Exchange, Inc. Sweetened Oat Mill Feed	4.7	3	27.8	30	—	Appears to be oat hulls and molasses
C. Pratt & Co., Ltd. Ruler Brand Ground Canadian Oats	{ 9.6 10.9	{ — —	{ 16.8 15.4	{ — —	{ 4.0 —	Sample contains more oat hulls than usually found in ground oats
Traker Oats Co. Peterborough Oat Huller Feed	{ 3.1 2.8	{ 2.5 2.5	{ 32.4 33.2	{ 34.0 34.0	{ — —	As represented
Victor Feeding Rolled Oats	16.0	16	1.2	2.5	2.0	As represented
Hilton Purina Co. Crimped Whole Oats	11.8	11.5	—	—	—	As represented
James Richardson & Sons, Ltd. Ground Oats	{ 13.5 10.1	{ — —	{ 6.0 —	{ — —	{ 2.2 —	Ground grain screenings from wheat and oats As represented
K. Webster Co. Ground Oats	13.4	—	—	—	—	As represented

Dry Dog Foods

Manufacturer and Brand	Protein		Fat		Fiber		U.S.P. Units Vitamin A per Pound (Includes Vitamin A Equivalent from Carotene)
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	
Allied Mills, Inc.							
Wayne Dog Food Blox....	26.4	25	5.5*	7	2.2	5	—
Wayne Dog Food Krums...	28.6	25	7.6	7	3.3	5	4,270
Animal Foundation, Inc.							
Hunt Club Full Diet Dog Meal.....	25.3	23	6.0	5	2.3	4	3,270
Barber & Bennett, Inc.							
Fort Orange Dog Food....	29.8	25	10.2	5	4.8	5	5,750
Battle Creek Dog Food Co.							
Miller's Kibbles Dog Food.	24.0	22	—	2	1.2	3	—
Beacon Milling Co., Inc.							
Beacon Dog Meal.....	23.9	22	5.8	4	3.6	5	—
Borden Co., Special Products Division							
Borden's Dog Food.....	26.7	25	—	4.5	—	5	3,390
Chas. M. Cox Co.							
Wirthmore Dog Food Meal	28.0	25	5.8	7	4.2	5	7,300
	27.5	25	6.8	7	3.8	5	—
Wirthmore Kibbled Dog Biscuit.....	26.8	22	4.5	2	2.4	3	4,940
John C. Dow Co.							
Dow's Dog Biscuit.....	24.7	21	5.8	3	0.5	2	—
Dow's New Improved Crumpled Meal.....	30.7	24	4.6	4	2.0	3.5	—
Dow's New Improved Crunchy.....	24.9	21	2.9	2.5	1.2	2	—
Eastern States Farmers' Exchange, Inc.							
Dog Feed (1).....	27.0	24	6.4	5.5	3.5	4	4,900
Elmore Milling Co., Inc.							
Elmore Completely Bal- anced Dog Food (2).....	22.3	22	6.2	3	3.0	3	—
John W. Eshelman Sons							
Red Rose Dog & Puppy Food (3).....	27.7	23	6.0	4.75	4.7	4.5	4,810
Nicholas Gangone							
Nick's Dog Food.....	24.4	24	3.6	4.5	2.7	4	3,640
General Mills, Inc.							
Larro Surechamp Food for Dogs.....	26.1	24	7.2	5	4.7	6	—
Great Atlantic & Pacific Tea Co.							
Daily Dog Food Kibbled Biscuit.....	23.9	22	2.9	3	2.1	3.5	6,110
Daily Dog Meal.....	25.4	23	4.6	3.5	2.5	4.5	3,500
Harper Feed Mills, Inc.							
Harco Dog Food.....	31.3	24	6.7	4	3.4	3.5	5,330
E. C. & W. L. Hopkins, Inc.							
Granite State Dog Food...	24.2	22	4.6	4	2.8	3	—
Kasco Mills, Inc.							
Kasco Complete Dog Ration.....	28.3	25	7.8	4	3.4	4	3,090

* Deficient in fat.

Ash found: (1) 9.2%, (2) 9.0%, (3) 7.9%.

Dry Dog Foods—(Concluded)

Manufacturer and Brand	Protein		Fat		Fiber		U.S.P. Units Vitamin A per Pound (Includes Vitamin A Equivalent from Carotene)
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	
ennel Food Supply Co. KFS Cero Meato Brand Dog Food.....	{ 22.9 22.7	21 21	2.2 1.6	2 2	1.6 1.7	3 3	2,520 1,800
ansfield Milling Co. Full Cry Dog Meal.....	23.0	23	6.0	5	3.2	5	—
arvin Grain Co. Marvin Dog Meal.....	{ 29.4 27.0 28.0	23 23 23	3.8* 4.4 4.8	5 5 5	3.7 3.3 3.3	5 5 5	— 7,320 6,300
eo. Q. Moon & Co., Inc. Moon Dog Food.....	23.7	26	4.5	4	3.6	4	—
ational Biscuit Co. Milk Bone Brand Dog Biscuit.....	23.4	21	2.2	2	0.8	2.5	7,400
Pal Dog Biscuit.....	21.9	18.5	1.8	1.5	2.0	2.5	2,830
ld Mother Hubbard Dog Food Co., Inc. Old Mother Hubbard Three Formula Kibbled Dog Biscuit.....	24.3	20	4.2	2	1.6	3	1,520
ld Trusty Dog Food Co. Old Trusty Flavor Baked Biscuit Bones.....	26.0	22	2.6	2	1.3	3	—
ark & Pollard Co., Inc. Munchy Dog Food.....	28.6	26	6.1	6	2.9	4.5	—
uaker Oats Co. Ken-L-Biskit.....	24.8	23	3.8	4	2.0	3.	—
alston Purina Co. Purina Dog Chow Kibbled Meal.....	27.3	24	6.7	5	3.6	5	7,790
Purina Dog Chow Checkers	27.6	24	5.4	5	4.8	5	5,110
pratt's Patent (America) Ltd. Spratt's Assorted Dog Biscuits.....	21.5	21	2.1	3	0.9	1	1,360
turdy Dog Food Co. Sturdy Dog Food.....	25.0	23	7.0	6	2.8	5	1,030
Sturdy Kibbled Ration..	21.9	21	3.3	3	1.4	2	800
wift & Co. Swift's Pard Meal.....	28.1	26	10.1	7.5	4.2	5	3,070
itality Mills, Inc. Vitality Brand Professional Dog Food.....	30.2	26	5.7	5	4.8	5	2,720

* Deficient in fat.

Ash found: (1) 9.2%, (2) 9.0%, (3) 7.9%.

Feed Supplements and Vitamin Mixtures

(All samples taken from lots delivered within six months of sampling date)

Manufacturer and Brand	Vitamin A U.S.P. Units per Pound		Riboflavin Milligrams per Pound		Niacin Milligrams per Pound	
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed
Borden Co., Special Products Div.						
Flaydry Poultry Feed Supplement	—	—	36.6	27.24	—	—
Pet-Pro	93,780	85,000	14.5	6.2	127.0	72.0
Vampros Accessory Feed for Poultry	10,220	10,000	—	—	—	—
Commercial Solvents Corp.						
B.Y-500 Dried Corn Fermentation Solubles	—	—	241.0	227.0	—	—
Corn Distillers Dried Solubles	—	—	5.7	—	—	—
*CSC Choline Supplement 25	—	—	—	—	—	—
Dawe's Laboratories, Inc.						
Aico Blend	—	—	18.2	—	—	—
Alco Blend	—	—	20.1	—	—	—
Flavonne Ribo-D	10,670	10,900	25.3	22.7	—	—
Flavonne Ribo-D	13,170	10,900	22.3	22.7	110.0	90.0
Riboflavin Supplement	—	—	3,404.0	3,630.0	—	—
Vitamelk Base	16,750	14,500	35.2	31.75	200.0	180.0
Vitamelk Base	19,750	14,500	39.6	31.75	187.0	180.0
Vitamelk Base	23,710	14,500	—	—	—	—
Vitamelk Multi-Vitamin Fortifier	23,430	14,500	32.7	31.75	185.0	180.0
Vitamelk Multi-Vitamin Fortifier	17,880	14,500	—	—	—	—
Vitamelk Multi-Vitamin Fortifier	20,200	14,500	—	—	—	—
Vitamelk Multi-Vitamin Fortifier	22,700	14,500	—	—	—	—
Vitamelk Multi-Vitamin Fortifier	11,640	14,500	—	—	—	—
Vitamelk Multi-Vitamin Fortifier	8,950	14,500	—	—	—	—
Vitamelk Multi-Vitamin Fortifier	18,170	14,500	—	—	—	—
Vitamelk Multi-Vitamin Fortifier	16,620	14,500	—	—	—	—
Vitamelk Multi-Vitamin Fortifier	20,080	14,500	—	—	—	—
Vitamelk Multi-Vitamin Fortifier	17,580	14,500	—	—	—	—
Vitamelk Multi-Vitamin Fortifier	16,380	14,500	51.2	31.75	201.0	180.0
Vitamelk Base Red Tag	46,400	29,000	34.0	31.75	—	—
Vitamelk Base Red Tag	33,530	29,000	—	—	—	—
Vitamelk Base Red Tag	34,390	29,000	—	—	—	—
Vitamelk Base Red Tag	41,770	29,000	35.0	31.75	93.0	90.0
Vitamelk Base, Ruminant Type	55,570	50,000	16.8	15.40	102.0	90.0
Vitamelk Base, Ruminant Type	68,100	50,000	15.9	15.40	100.0	90.0
Vitamelk Base, Ruminant Type	44,040	29,000	—	—	—	—
Vitamelk Base, Ruminant Type	73,090	50,000	—	—	—	—
Vitamelk Base, Ruminant Type	52,500	50,000	—	—	—	—
Vitamelk Base, Ruminant Type	21,100	50,000	—	—	—	—
Special Mix 261 (Starter-Grower)	—	—	36.3	31.75	285.0	180.0
Deep Sea Products, Inc.						
Nutrisol	—	—	109.0	80.0	72.0	50.0
E. F. Drew Co.						
A & D Poultry & Animal Feeding Oil 300 D, 3,000 A	1,371,080	1,362,000	—	—	—	—
Gorton-Pew Fisheries Co., Ltd.						
Al-Blend "Junior"	34,870	30,000	21.0	18.0	—	—
Al-Blend "Junior"	32,690	30,000	18.4	18.0	—	—
Al-Blend "Junior"	52,300	30,000	21.2	18.0	—	—
Al-Blend "Senior"	60,840	50,000	16.0	14.0	—	—
Al-Blend "Senior"	103,060	50,000	16.9	14.0	—	—
Al-Blend "Senior"	61,740	50,000	22.9	14.0	—	—
Mar-Vi-Tic Blend	120,580	90,000	47.2	40.0	384.0	460.0
Illinois Yeast Co.						
Yeast Glow Cultured Yeast	—	—	45.8	45.4	745.0	227.0
Kraft Food Co.						
Kraco	—	—	10.2	—	—	—
Lederle Laboratories Div., American Cyanamid Co.						
*Fortafeed Brand Feed Supplement	—	—	2,018.0	2,000.0	2,178.0	2,000.0

*Choline determined and found above guaranteed amount.

Feed Supplements and Vitamin Mixtures—(Concluded)

Manufacturer and Brand	Vitamin A U.S.P. Units per Pound		Riboflavin Milligrams per Pound		Niacin Milligrams per Pound	
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed
Merck & Co. Vitamin Mixture No. 87	—	—	2,000.0	2,000.0	11,460.0	10,000.0
New York Quinine & Chemical Works, Inc. Acid Nicotinic	—	—	—	—	99,877	—
Nopco Chemical Co. Breeder & High Energy Premix	272,400	227,000	750.0	720.0	3,840.0	3,600.0
Custom Mix—Vitamin Mix No. 2	322,300	300,000	637.0	600.0	4,040.0	4,000.0
Poultry Vitamin Mineral Mixture No. 1	323,300	300,000	675.0	600.0	5,450.0	5,000.0
Super Gro Nitro-A Premix	—	—	605.3	600.0	4,041.0	4,000.0
Pollio Dairy Products Corp. Whey Powder	—	—	9.1	—	—	—
Pure Milk Products Co. Dried Whey Product 40% Lactose	—	—	11.2	—	—	—
Racificide, Inc. Dispersed Niacin	—	—	—	—	45,400	45,000
Stabilized Vitamins, Inc. Stabilized Vitamin A and D in Powder Form	1,461,880	1,362,000	—	—	—	—
Stabilized Vitamin A and D in Powder Form	1,198,400	1,362,000	—	—	—	—
West Side Co-Op Creamery Dried Buttermilk	—	—	12.0	—	—	—
Western Condensing Co. Peebles' Calf Kit	18,050	12,000	24.4	23.0	—	—
Whitmoyer Laboratories, Inc. Clo-Meal	—	—	118.0	70.0	832.0	700.0
Dri-Col 3,000 A	1,480,100	1,360,000	—	—	—	—
Dri-Col 3,000 A	1,688,900	1,360,000	—	—	—	—
Dri-Col 10,000 A	4,653,000	4,540,000	—	—	—	—
Dri-Col 3,000 A	1,929,500	1,360,000	—	—	—	—
Flav-A-Dee	—	—	59.4	60.0	—	—
U.C.F. Vitamin Premix No. 1	—	—	281.0	200.0	4,097.0	4,000.0

*Choline determined and found above guaranteed amount.

Alfalfa Meals

Manufacturer and Brand	Protein		Fiber		Ash	Carotene Milligrams per Pound	U.S.P. Units Vitamin A per Pound (Vitamin A Equivalent from Carotene)
	Found	Guar- anteed	Found	Guar- anteed			
Barton Mills, Inc. Barton's 17% Dehydra- ted Alfalfa Meal.....	16.0 ^a	17	25.8	27	—	26.3	43,840
Calvert Milling Co. 17% Dehydrated Alf- alfa Meal.....	19.3 19.7	17 17	26.0 27.2	27 27	— —	60.3 42.2	100,520 70,350
15% Dehydrated Alf- alfa Meal.....	16.5	15	28.1	30	—	31.8	53,010
A. B. Caple Co. 17% Capex Dehydrated Alfalfa Meal.....	18.0 18.5	17 17	25.2 18.2	27 27	8.0 —	29.1 90.1	48,510 150,200
Caro-Green, Inc. Caro-Green Dehydrated Alfalfa Meal.....	18.9 18.4 19.3 17.7	17 17 17 17	22.3 23.6 22.4 29.7 ^b	27 27 27 27	— — — —	79.0 64.4 48.1 24.0	131,690 107,350 80,180 40,010
Central Mills, Inc. Cent-O-Green De- hydrated Alfalfa Meal	17.8	17	30.8 ^b	27	—	21.8	36,340
Hayward, Inc. Hayward's Alfalfa Meal (Dehydrated).....	19.1 17.4	17 17	24.4 25.4	27 27	— —	61.6 50.8	102,690 84,680
Keystone Dehydrators Keystone Super-Green Dehydrated Alfalfa Meal.....	19.8 19.0	17 17	23.3 25.4	27 27	— —	41.7 66.6	69,510 111,020
MHR Alfalfa Co., Inc. Alfalfa Meal 17.....	14.1 ^a	17	26.8	27	—	20.8	34,670
Platte Valley Products, Inc. 17% Dehydrated Alfalfa Meal.....	18.5 19.8	17 17	25.4 24.7	27 27	— —	37.6 37.7	62,680 62,850
Portage Valley Milling Co, Inc. Valley Green Alfalfa Meal.....	18.0	17	24.5	27	—	46.7	77,850
Prairie Dehydrating Co. Prairie 17% Dehydrated Alfalfa Meal.....	18.1	17	26.9	27	—	39.4	65,680
Saunders Mills, Inc. 17% Alfalfa Meal.....	15.2 ^a	17	29.6 ^b	27	—	10.7	17,840
Schoeneck Farms, Inc. Schoeneck's Super-Green Dehydrated Alfalfa Meal.....	18.9 15.2 ^a 20.4 20.4 18.6 18.6 19.4 17.8 17.0	17 17 17 17 17 17 17 17 17	26.0 27.4 22.1 21.9 20.9 22.3 — 21.1 28.8 ^b	27 27 27 27 27 27 27 27 27	8.0 — — — — — — — —	63.5 34.0 67.1 63.5 80.6 68.9 69.0 42.2 19.5	105,860 56,680 111,860 105,850 134,360 114,860 115,020 70,350 32,510

^a Protein deficient.^b Fiber excessive.

Alfalfa Meals—(Concluded)

Manufacturer and Brand	Protein		Fiber		Ash	Carotene Milligrams per Pound	U.S.P. Units Vitamin A per Pound (Vitamin A Equivalent from Carotene)
	Found	Guar- anteed	Found	Guar- anteed			
chwab Bros. Mills, Inc. Bavarian Brand 17% Dehydrated Alfalfa Meal.....	18.2	17	24.6	27	—	43.1	71,850
oux Alfalfa Meal Co. Sioux Alfalfa Meal 17% Dehydrated.....	19.2	17	24.6	27	—	49.5	82,520
F. J. Small Co. Small's 17% Dehydrated Alfalfa Meal.....	17.8	17	27.2	27	10.0	39.0	65,010
	18.4	17	24.7	27	—	58.0	96,690
	18.5	17	24.2	27	—	72.5	120,860
	17.2	17	26.4	27	—	43.5	72,510
	17.4	17	26.8	27	—	49.4	82,350

a Protein deficient.*b* Fiber excessive.

**Directory of Manufacturers Who Registered Feeds for Sale
in Massachusetts in 1954**

Acme-Evans Co., Inc., 902 West Washington Ave., Indianapolis 9, Ind.
L. P. Adams Co., 484 Housatonic St., Dalton, Mass.
Adams Packing Association, Inc., Auburndale, Florida
Ajax Dog Food Co., 49 Pine St., Dedham, Mass.
Albers Milling Co., 6130 Avalon Blvd., Los Angeles 3, Cal.
Allied Mills, Inc., Chicago, Ill.
Amburgo Co., Inc., 1315-17 Walnut St., Philadelphia 7, Penn.
American Crystal Sugar Co., 600 Boston Bldg., Denver, Col.
American Cyanamid Co., Fine Chemicals Div., Princeton, N. J.
American Maize-Products Co., 100 East 42nd St., New York 17, N. Y.
Anderson Feed Store, Inc., Box 147, Townsend, Mass.
Animal Foundation, Inc., Sherburne, N. Y.
Arcady Farms Milling Co., 500 West 138th St., Chicago 27, Ill.
Archer-Daniels Midland Co., 600 Roanoke Bldg., Minneapolis 2, Minn.
Ashcraft-Wilkinson Co., 601 Trust Co. of Georgia Bldg., Atlanta, Ga.

E. W. Bailey & Co., Inc., Montpelier, Vt.
H. J. Baker & Bro., 600 Fifth Ave., New York 20, N. Y.
Bannock Food Co., Inc., Esco Bldg., East Biddle St., West Chester, Penn.
Barber & Bennett, Inc., Arch & Church Sts., Albany, N. Y.
Battle Creek Dog Food Co., 60 East State St., Battle Creek, Mich.
Beacon Milling Co., Inc., Cayuga, N. Y.
Berkman Grain Co., North Franklin, Conn.
Best Dog Food Co., 447 Timpson Place, Bronx 55, N. Y.
Best Foods, Inc., 1442 Marine Trust Bldg., Buffalo, N. Y.
Blatchford Calf Meal Co., 2 Madison St., Waukegan, Ill.
Borden Co., Special Products Div., 350 Madison Ave., New York 17, N. Y.
Borden Grain Co., 700 West Water St., Taunton, Mass.
Borden's Soy Processing Co., Division of the Borden Co., Kankakee, Ill.
Brown-Forman Distillers Corp., 1908 Howard St., Louisville, Ky.
George B. Brown Corp., Ipswich, Mass.
Buckeye Cotton Oil Co., 6th & Main Sts., Cincinnati, Ohio

Cal-Cod Process Co., New Hamburg, N. Y.
Cargill, Inc., 413 South 5th St., Minneapolis, Minn.
Caro-Green, Inc., 2463 South 27 Ave., Omaha, Neb.
Central Soya Co., Inc., Fort Wayne, Ind.
Citrus Feed Co., P. O. Box 513, Lakeland, Florida
H. E. Clark Co., 419 Main St., Winfield, Kan.
Clinton Foods, Inc., Clinton, Iowa
Clinton Foods, Inc., Florida Products Div., Auburndale, Florida
Clyde Milling Corp., Sodus St., Clyde, N. Y.
Coatsworth and Cooper, Ltd., 67 Yonge St., Toronto, Ont., Canada
Commercial Solvents Corp., 1331 South First St., Terre Haute, Ind.
Community Service, Inc., Canaan, Conn.
Connecticut Grains Corp., Crosby St., Lowell, Mass.
Consolidated Products Co., 119 North Washington Ave., Danville, Ill.
Consolidated Rendering Co., 178 Atlantic Ave., Boston 10, Mass.
Corn Products Refining Co., 17 Battery Place, New York 4, N. Y.
Courcy & Sons Grain Co., Taunton, Mass.
Cover Grain & Feed Co., 150 Middle St., Lowell, Mass.
Chas. M. Cox Co., 177 Milk St., Boston 9, Mass.
Crawford Brothers, Inc., 109 Delaware St., Walton, N. Y.

Dailey Mills, Inc., 1405 Buffalo St., Olean, N. Y.
Dairy Association Co., Inc., Lyndonville, Vt.
Dairymen's League Co-Operative Association, Inc., 100 Park Ave., New York 17, N. Y.

Dawe's Laboratories, Inc., 4800 South Richmond St., Chicago 32, Ill.
 Dawnwood Farms, Smithfield Road, Amenia, N. Y.
 Dean & Lee, Chemung St., Horseheads, N. Y.
 Decatur Milling Co., Inc., 717 North Union St., Decatur, Ill.
 Decatur Soy Products Co., 518 East Gault St., Decatur, Ill.
 Delaware Mills, Inc., Front St., Deposit, N. Y.
 Michael J. Diauto, 87 Warren St., Randolph, Mass.
 F. Diehl & Son, Inc., 180 Linden St., Wellesley 81, Mass.
 Dietrich & Gambrell, Inc., South Carroll St., Frederick, Md.
 John C. Dow Co., 40-44 Prospect St., Gloucester, Mass.
 Drackett Products Co., 5020 Spring Grove Ave., Cincinnati 32, Ohio
 E. F. Drew & Co., Inc., 15 East 26th St., New York, N. Y.
 J. L. Dunnell & Son, Bernardston, Mass.
 E. J. du Pont de Nemours & Co., Wilmington, Del.

Eastern States Farmers' Exchange, Inc., 26 Central St., West Springfield, Mass.
 Elmore Milling Co., Inc., Oneonta, N. Y.
 John W. Eshelman & Sons, 244 North Queen St., Lancaster, Penn.
 Essex County Co-operative Farming Association, Topsfield, Mass.
 Evans Milling Co., Inc., 1730 West Michigan St., Indianapolis, Ind.
 Excelsior Milling Co., 712 Flour Exchange, Minneapolis, Minn.

Farm Bureau Association, 155 Lexington St., Waltham 54, Mass.
 Farmers Feed Co., 532 East 76th St., New York 21, N. Y.
 Farmers' Marketing & Supply Co., 5903 Northwest Highway, Chicago 31, Ill.
 Feed Products, Inc., Groveland, Florida
 First National Stores, Inc., 5 Middlesex Ave., Somerville, Mass.
 Fishery Products, Inc., 1200 West 9th St., Cleveland 13, Ohio
 Flambeau Milling Co., Phillips, Wis.
 Florida Citrus Canners Cooperative, P. O. Box 112, Lake Wales, Florida
 Flory Milling Co., Inc., Bangor, Penn.
 Fred A. Fountain, 355 Tremont St., Taunton, Mass.
 Fruit Industries, P. O. Box 338, Bradenton, Florida

General Foods Corp., Birds Eye Div., 209 New Boston St., Woburn, Mass.
 General Foods Corp., Corn Mill Div., Kankakee, Ill.
 General Foods Corp., Gaines Div., 180 South Dearborn Ave., Kankakee, Ill.
 General Mills, Inc., P. O. Box 68, North End Station, Detroit 2, Mich.
 General Mills, Inc., 400 Second Ave., South, Minneapolis, Minn.
 General Mills, Larowe Region, Box 68, North End Station, Detroit 2, Mich.
 Geryk's Guaranteed Feeds, 29 Exeter St., Easthampton, Mass.
 Glidden Co., Feed Mill Div., 1160 West 18th St., Indianapolis, Ind.
 Glidden Co., Soya Products Div., 1825 North Laramie Ave., Chicago 39, Ill.
 Gloucester By-Products, Inc., State Fish Pier, Gloucester, Mass.
 Goldenrod Oil Meal Sales Co., 727 Beale Ave., Memphis 1, Tenn.
 Gorton-Pew Fisheries Co., Ltd., 327 Main St., Gloucester, Mass.
 D. H. Grandin Milling Co., Jamestown, N. Y.
 Great Atlantic & Pacific Tea Co., 817 Andrus Bldg., Minneapolis 2, Minn.

Haffenreffer & Co., Inc., 30 Germania St., Boston 30, Mass.
 Hales & Hunter Co., 141 West Jackson Blvd., Chicago, Ill.
 D. Harbeck & Sons, 405 Earle St., New Bedford, Mass.
 Harper Feed Mills, Inc., 271 West Wheeling St., Washington, Penn.
 Hartz Mountain Products Corp., 36 Cooper Square, New York 3, N. Y.
 Dr. Hess & Clark, Inc., 7th & Orange Sts., Ashland, Ohio
 Hi-Life Packing Co., 431 South Dearborn St., Chicago 5, Ill.
 W. L. Hogg, Ltd., 2965 Notre Dame East, Montreal, Que., Canada
 H. P. Hood & Sons, Inc., 500 Rutherford Ave., Boston 29, Mass.
 E. C. & W. L. Hopkins, Inc., Greenfield, N. H.
 Hubinger Co., 601 Main St., Keokuk, Iowa
 Humphreys-Godwin Co., 2246 Park Ave., Memphis, Tenn.

Illinois Cereal Mills, Inc., South Jefferson Ave., Paris, Ill.
Illinois Yeast Co., Box 105, Princeton, Ill.
Independent Tallow Co., 39 Cedar St., Woburn, Mass.
Internatio-Rotterdam, Inc., 61 Broadway, New York 6, N. Y.
International Milling Co., 800 McKnight Bldg., Minneapolis, Minn.
International Stock Food Corp., P. O. Box 271, Delhi, N. Y.

Jaquith & Co., Inc., 305 Main St., Woburn, Mass.

Kansas Flour Mills Co., Div. of Flour Mills of America, Inc., Kansas City 42, Mo.
Kasco Mills, Inc., 435 Fulton, Waverly, N. Y.
Kellogg Co., Feed Dept., 235 Porter St., Battle Creek, Mich.
Spencer Kellogg & Sons, Inc., 98 Delaware Ave., Buffalo 2, N. Y.
Kennel Food Supply Co., Inc., 63 Mill Hill Ter., Fairfield, Conn.
Keystone Chemurgic Corp., R. D. No. 1, Bethlehem, Penn.
Keystone Dehydrators, Box 204, Nazareth, Penn.
H. C. Knoke & Co., 5728 West Roosevelt Road, Chicago 50, Ill.
Chas. A. Krause Milling Co., P. O. Box 1156, Milwaukee 1, Wis.
Kronick's Coal & Grain Co., Adams, Mass.
Kuder Pulp Sales Co., Lake Alfred, Florida

Lauhoff Grain Co., 333 East North St., Danville, Ill.
Lauhoff Soya Co., P. O. Box 571, Danville, Ill.
Libby, McNeill & Libby, 4134 South Packers Ave., Chicago 9, Ill.
Libner Grain Co., Inc., 25 Commerce St., Norwalk, Conn.
Limestone Products Corp. of America, 122 Main St., Newton, N. J.
Lincoln Mills, Inc., 1203 West 23rd St., Indianapolis, Ind.
L. B. Lovitt & Co., 314 Cotton Exchange Bldg., Memphis, Tenn.

McCabe Grain Co., Ltd., 409 Grain Exchange, Winnipeg, Man., Canada
McMillen Feed Mills, Div. of Central Soya Co., Inc., Fort Wayne 2, Ind.
Mansfield Milling Co., Mansfield, Mass.
Marden-Wild Corp., 500 Columbia St., Somerville 43, Mass.
Marianna Sales Co., 510 Cotton Exchange Bldg., Memphis, Tenn.
Marine Products Co., 345 West First St., Boston 27, Mass.
Maritime Milling Co., Inc., 1009 Chamber of Commerce, Buffalo 2, N. Y.
Marvin Grain Co., 31 Cove Road, South Dartmouth, Mass.
Merchants Creamery Co., 536 Livingston St., Cincinnati 14, Ohio
Merck & Co., Inc., Rahway, N. J.
Merimack Farmers' Exchange, Inc., 10 Pleasant St. Ext., Concord, N. H.
Methuen Grain Co., Inc., Methuen, Mass.
Miller Alfalfa Co., Jackson & Gorman Sts., Defiance, Ohio
Miner-Hillard Milling Co., 826 Second National Bank Bldg., Wilkes-Barre, Penn.
Minute Maid Corp., Leesburg, Florida
Monsanto Chemical Co., 1700 South Second St., St. Louis 4, Mo.
Montmorency Distillery, Ltd., Beaupre, Que., Canada
Geo. Q. Moon & Co., Inc., 201 Chenango St., Binghamton, N. Y.
John Morrell & Co., Ottumwa, Iowa
Jas. F. Morse & Co., 11 Horace St., Somerville 43, Mass.
Morton Salt Co., 120 South LaSalle St., Chicago 3, Ill.
Mount Vernon Milling Co., Mount Vernon, Ind.
Mowat, Wilson & Co., 18675 James Couzens Highway, Detroit 35, Mich.
Myzon, Inc., 1142 West Roscoe St., Chicago, Ill.

Nappanee Milling Co., Inc., 301 South Jackson St., Nappanee, Ind.
National Alfalfa Dehydrating & Milling Co., 101 South 4th St., Lamar, Col.
National Biscuit Co., 449 West 14th St., New York 14, N. Y.
National Biscuit Co., Toledo Mill, 2221 Front St., Toledo 5, Ohio
National Distillers Products Corp., 120 Broadway, New York 5, N. Y.

National Vitamin Products Co., 3401 Hiawatha Ave., Minneapolis, Minn.
Neumond Co., 300 Merchants Exchange Bldg., St. Louis 2, Mo.
Nitrogen Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.
Nopco Chemical Co., Harrison, N. J.

Ogden Grain Co., Utica, N. Y.
Old Mother Hubbard Dog Food Co., Inc., 40-44 Prospect St., Gloucester, Mass.
Old Trusty Dog Food Co., 278 West St., Needham Heights 94, Mass.
Orleans Candy Co., 431 South Dearborn St., Chicago 5, Ill.
Oswego Soy Products Corp., Oswego, N. Y.
Owensboro Grain Co., Inc., 102 Lewis St., Owensboro, Ky.

Pabst Brewing Co., 221 North LaSalle St., Chicago, Ill.
Palm Grain Co., Lowell, Mass.
Park & Pollard Co., Inc., 356 Hertel Ave., Buffalo 7, N. Y.
George H. Parker Grain Co., 56 Water St., Danvers, Mass.
Pasco Packing Co., Dade City, Florida
Patent Cereals Co., Geneva, N. Y.
Chas. Pfizer & Co., Inc., 11 Bartlett St., Brooklyn 6, N. Y.
Phenix Foods Co., 460 East Illinois St., Chicago, Ill.
Pillsbury Mills, Inc., Minneapolis 2, Minn.
Pollio Dairy Products Corp., 3480 Fulton St., Brooklyn 8, N. Y.
Post Cereals Division, General Foods Corp., 275 Cliff St., Battle Creek, Mich.
Pratt Food Co., 69 Leddy St., Buffalo 10, N. Y.
R. C. Pratt & Co., Ltd., 18 Toronto St., Toronto, Ont., Canada
Publicker Industries, Inc., 1429 Walnut St., Philadelphia 2, Penn.

Quaker Oats Co., Merchandise Mart Plaza, Chicago 54, Ill.

Ralston Purina Co., 835 South Eighth St., St. Louis 2, Mo.
John Reardon & Sons Division of Wilson & Co., Inc., 51 Waverly St., Cambridge, Mass.
D. F. Riley, Hatfield, Mass.
Riverside Elevator Co., 1366 Penobscot Bldg., Detroit, Mich.
Rudhard Products, Inc., 248 Michigan Ave., Buffalo 3, N. Y.
Russell-Miller Milling Co., 900 Midland Bank Bldg., Minneapolis 1, Minn.
Ryther & Warren Co., Belchertown, Mass.

Saunders Mills, Inc., Toledo, Ohio
Schenley Distillers, Inc., 350 Fifth Ave., New York 1, N. Y.
Schoeneck Farms, Inc., Nazareth, Penn.
Sea Board Supply Co., 35th & Grays Ferry Ave., Philadelphia 46, Penn.
Joseph E. Seagram & Sons, Inc., Seventh Street Road, Louisville 1, Ky.
Shea Chemical Co., Inc., Adams, Mass.
Sherwin-Williams Co., 101 Prospect Ave., N. W., Cleveland, Ohio
Silmo Chemical Corp., Vineland, N. J.
Sioux Alfalfa Meal Co., Vermillion, S. D.
W. J. Small Co., Division of Archer-Daniels-Midland Co., 1200 Oak St., Kansas City 6, Mo.
Allen V. Smith, Inc., Marcellus Falls, N. Y.
B. T. Smith Concentrates, Inc., Lakeland, Florida
Smith Meal Co., Inc., Amagansett, N. Y.
Southern Fruit Distributors, Inc., Orlando, Florida
Spratt's Patent (America) Ltd., 18 Congress St., Newark 5, N. J.
A. E. Staley Manufacturing Co., Eldorado & 22nd Sts., Decatur, Ill.
Standard Brands, Inc., 595 Madison Ave., New York 22, N. Y.
Stock Gro, Inc., 30 North Michigan St., Chicago 2, Ill.
Sturdy Dog Food Co., 2103 West Genesee St., Syracuse, N. Y.
Sunshine Biscuits, Inc., Milling Division, Mechanic St., Grafton, Ohio
Suni-Citrus Products Co., Haines City, Florida
Swansea Grain Co., 970 Brayton Ave., Somerset, Mass.
Swift & Co., Pard Dept., Union Stock Yards, Chicago 9, Ill.
Swift & Co., Soybean Mill, Fostoria, Ohio

Taft Bros., Uxbridge, Mass.

Taunton Grain Co., Taunton, Mass.

Tennessee Eastman Co., Division of Eastman Kodak Co., Kingsport, Tenn.

Union Starch & Refining Co., 301 Washington St., Columbus, Ind.

United Co-Operative Farmers, Inc., 339 Broad St., Fitchburg, Mass.

Unity Feeds, Inc., 177 Milk St., Boston, Mass.

George Urban Milling Co., 332 North Oak St., Buffalo 3, N. Y.

Valier & Spies Milling Co., Division of Flour Mills of America, Inc., Kansas City 42, Mo.

Van Iderstine Co., 37-30 Review Ave., Long Island City 1, N. Y.

Ventura Grain Co., 7 Purchase St., Taunton, Mass.

Victory Mills, Ltd., 285 Fleet Street E., Toronto, Ont., Canada

Vitality Mills, Inc., 141 West Jackson Blvd., Chicago, Ill.

O. B. Vunck & Son, Voorheesville, N. Y.

Hiram Walker & Sons, Inc., Foot of Edmund St., Peoria, Ill.

C. P. Washburn Co., Middleboro, Mass.

H. K. Webster Co., 24 West St., Lawrence, Mass.

Western Condensing Co., Appleton, Wis.

Whitmoyer Laboratories, Inc., 19 North Railroad St., Myerstown, Penn.

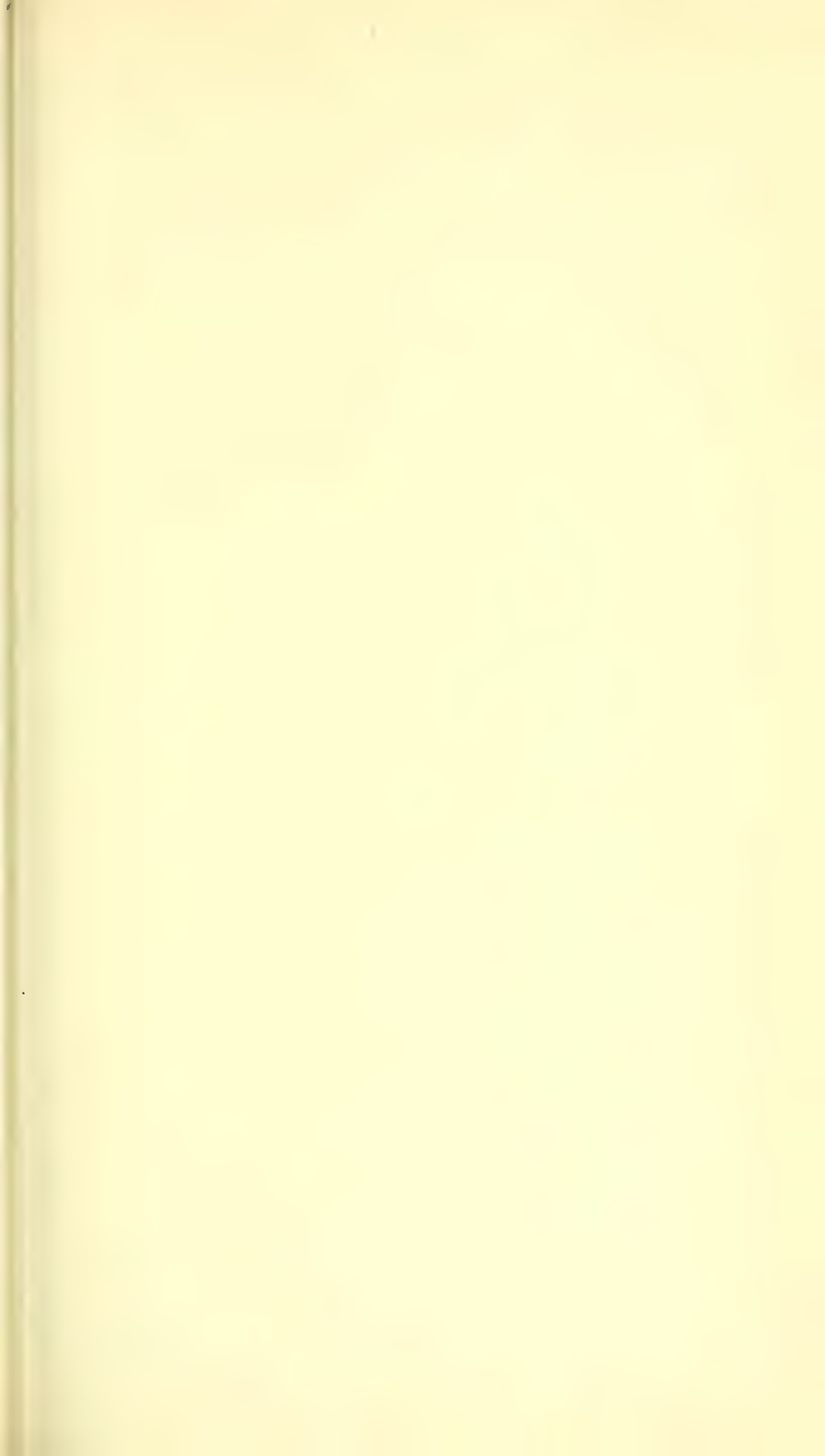
Wilson's Corn Products, East Fourth St., Rochester, Ind.

Wirthmore Grain Co., Taunton, Mass.

Worcester Grain & Coal Co., 294 Franklin St., Worcester, Mass.

Yieldmor Feeds, Inc., 101 South Downing St., Piqua, Ohio







Thirty-fourth Annual Report of Pullorum Disease Eradication in Massachusetts



A total of 419 chicken, turkey, and pheasant flocks was tested during the 1953-54 testing season. Among 1,229,938 samples tested only 0.004 percent were found positive which was the lowest percentage in the history of the testing program. Two flocks that were negative the previous season revealed reactors. At the close of the testing season only three flocks were classified as infected. Massachusetts flock owners have demonstrated that pullorum disease can be eradicated from breeding flocks since 99.39 percent of all birds tested are in nonreacting flocks.

THIRTY-FOURTH ANNUAL REPORT OF PULLORUM DISEASE ERADICATION IN MASSACHUSETTS 1953-54

H. Van Rockel, Miriam K. Clarke, Joseph E. Gray,

G. H. Snoeyenbos, and R. A. Bennett

INTRODUCTION

It is gratifying to note that the results for the 1953-54 testing season continue to reveal progress in pullorum disease eradication in Massachusetts. The volume of testing was slightly greater than that of the previous season. The percentage of reactors was 0.004, the lowest ever attained in the history of the testing work. Likewise, the number of "breaks" (2) was the lowest on record. Only three flocks were classified as infected at the close of the testing season. Of the total birds tested, 98.43 percent were found in 100 percent tested nonreacting flocks. The testing results definitely reveal that progress is being made in the elimination of the disease.

It is recognized that the cooperation of the flock owner is a primary essential in the eradication of this disease. The laboratory appreciates the fine cooperation received from the majority of flock owners in striving to obtain a common objective, the eradication of pullorum disease. It is hoped that all flock owners and other agencies will continue with earnest desire and concerted effort to eliminate completely this disease from Massachusetts flocks.

We also wish to express our appreciation for the assistance given by the Extension Service, Massachusetts Department of Agriculture, and other agencies in making this program a success.

SUMMARY OF SERVICE RENDERED

Flocks tested.....	419
Chicken.....	338
Turkey.....	60
Pheasant.....	21
Number of tests.....	1,229,938
Chickens:	
Routine.....	1,189,054
Experimental.....	6,105
Fowl other than chickens:	
Routine.....	34,756
Experimental.....	23
Owners receiving necropsy service.....	41
Necropsies of reacting birds.....	61
Fowl Typhoid Tests:	
Number of flocks.....	25
Number of tests.....	36,133

Table 1. Distribution of Tests and Reactors by Counties and by Breeds

Breeds	Barnstable	Berkshire	Bristol	Essex	Franklin	Hampden	Hampshire	Middlesex	Norfolk	Plymouth	Worcester	Totals	Percent Positive
Rhode Island Reds													
Total tests.....	3,752	1,090	51,643	25,227	8,041	10,953	7,565	44,834	58,018	21,842	67,854	300,819	0.01
Positive tests.....	0	0	0	2	0	0	0	34	0	0	0	36	
New Hampshires													
Total tests.....	15,007		33,452	56,555	100		2,451	21,008	960	57,194	12,984	199,711	0.0015
Positive tests.....	0		0	0	0		0	0	0	3	0	3	
Barred Plymouth Rocks													
Total tests.....	1,046	4,860	42,318	11,075	10,944	1,059	1,938	53,325	22,583	47,695	34,698	231,541	0.00
Positive tests.....	0	0	0	0	0	0	0	0	0	0	0	0	
White Plymouth Rocks													
Total tests.....	4,851	28,443	12,534	74,750	11,853	5,661	22,501	85,220	8,522	38,963	30,677	323,975	0.0009
Positive tests.....	0	0	0	1	2	0	0	0	0	0	0	3	
White Leghorns													
Total tests.....		16,974	635	8,742	2,819	518	1,681	122	20,937		2,619	55,047	0.00
Positive tests.....		0	0	0	0	0	0	0	0		0	0	
Miscellaneous													
Total tests.....	894	340	8,408	30,791	677	218	291	11,131	8,793	17,879	4,644	84,066	0.01
Positive tests.....	0	0	0	11	0	0	0	0	0	0	0	11	
Total Tests.....	25,550	51,707	148,990	207,140	34,434	18,409	36,427	215,640	119,813	183,573	153,476	1,195,159	
Positive tests													
Number.....	0	0	0	14	2	0	0	34	0	3	0	53	
Percent	0.00	0.00	0.00	0.007	0.006	0.00	0.00	0.02	0.00	0.002	0.00	0.00	0.004

DISTRIBUTION OF TESTS AND REACTORS

Flock owners in 11 counties received testing service. A total of 1,195,159 samples was tested of which 0.004 percent were positive. Middlesex, Essex, Plymouth, and Worcester lead in the number of samples tested. Only four counties (Essex, Franklin, Middlesex, and Plymouth) revealed reactors.

The following breeds were tested: Bantam, Barred Plymouth Rock, Brahma, Columbian, Cornish, Crosses, Delaware, Eisenbar, New Hampshire, Rhode Island Red, White American, White Leghorn, White Plymouth Rock, White Wyandotte.

The White Plymouth Rock, Rhode Island Red, Barred Plymouth Rock, and New Hampshire were the predominating breeds tested. It is of interest to note the increase in the number of White Plymouth Rocks as compared with the number of the previous season. Of the total samples, 27.11 percent were taken from White Plymouth Rock, 25.17 percent from Rhode Island Red, 19.37 percent from Barred Plymouth Rock, 16.71 percent from New Hampshire, and the remainder from other breeds tested. Of the 1,090,438 samples collected from females, 38,735 were from hens and 1,051,703 from pullets, with 0.07 and 0.002 percent reactors, respectively. Among the 104,721 samples collected from males, 0.00095 percent were positive.

ANNUAL TESTING OF FLOCKS

Table 2 lists the results from flocks tested (1) for the first time, (2) intermittently, (3) for two consecutive years, and (4) for three or more consecutive years.

In the group tested for the first time, no reactors were detected. In comparison with the results of the previous season the number of tested flocks decreased, whereas the number of tested birds increased slightly. The average number of birds to a flock in this group was 1,945.

In the intermittent and two-year-tested groups the percentages of infection were observed to be the same, and only two flocks were classified as positive. In one case the flock had revealed reactors the previous season, and the owner neglected to follow the recommendations suggested for eradication of the infection. In the other case inadequate precautions may be responsible for the introduction of the infection. It is gratifying to note that in these two groups 126,174 birds were tested of which only 0.03 percent were positive. The average number of tested birds per flock for these two groups is as follows: intermittent 1,951; and two consecutive years 2,506.

Table 2. Annual Testing Versus Single and Intermittent Testing

Classification	Flocks	Birds	Total Tests	Positive Tests		Negative Flocks		Positive Flocks	
				Number	Percent	100 Percent Tested	Partially Tested	100 Percent Tested	Partially Tested
Tested for the first time.....	26	50,560	50,560	0	0.00	25	1	-	-
Intermittent testing	21	40,968	48,206	16	0.03	17	3	1	-
Two consecutive years.....	34	85,206	85,206	29	0.03	33	-	-	1
Three or more consecutive years	257	1,001,356	1,001,187	8	0.0007	251	5	1	-
TOTALS.....	338	1,178,090	1,195,159	53	0.004	326	9	2	1

In the group tested for three or more consecutive years there were 257 flocks, representing 1,011,187 tests, of which 0.0007 percent were positive. Only one flock was classified as positive. The average number of birds per flock was 3,895.

For all the four groups 338 flocks were tested, representing 1,178,090 birds, and 1,195,159 samples of which 0.004 percent were positive. This is the lowest percentage of reactors ever detected in the testing history of the State. The 326 flocks that were 100 percent tested and nonreacting contained 1,159,567 birds or 98.43 percent of total birds tested. Three flocks were classified as positive. The average percentage of reactors among these birds was 0.48.

During the past year, 80 or 21.56 percent of the flocks tested in 1952-53 were not tested. Annual testing of flocks is necessary to determine the pullorum status of flocks in order that infection may be detected before it has an opportunity to become widely disseminated. Each year infection is detected in flocks with a previous pullorum-clean record. Therefore, flock owners should recognize the need for testing.

APPEARANCE OF INFECTION IN FLOCKS PREVIOUSLY NEGATIVE

During the past year pullorum "breaks" were observed in only two flocks in contrast to seven the previous year. Both of these flocks had less than 0.5 percent infection. The source of the infection could not be established.

In table 3 is given the incidence of "breaks" among Massachusetts tested flocks during the past fifteen years. The number of "breaks" this past year is the lowest in the testing history of Massachusetts. It is hoped that no "breaks" will occur in future years and that flock owners, hatcherymen, and other agencies will exercise due care in preventing the introduction of the infection. The precautions frequently violated are (1) the purchase of questionable stock, (2) hatching from pullets before they are tested, and (3) hatching of chicks or poults at a hatchery of unknown pullorum status.

It cannot be emphasized and urged too strongly that one should check the official pullorum status of all breeding flocks and hatcheries before stock is purchased. It is recommended that the flock owners and hatcherymen observe the strictest vigilance against the introduction and spread of the disease.

The following measures have been found to be effective in establishing and maintaining a pullorum-free flock:

1. All the birds on the premises should be tested each year.
2. If infection is present, the entire flock should be retested within four to six weeks until a negative report is obtained, provided the value of the birds justifies the expenditure.
3. Every reactor, regardless of its value, should be removed from the premises and sold for slaughter immediately upon receipt of the reports.
4. Offal from all birds dressed for market or home consumption as well as dead birds that are not fit for consumption should be burned.
5. The poultry houses, runs, and equipment should be thoroughly cleaned and disinfected immediately after removal of reactors. An empty pen to each house should be provided to facilitate cleaning and disinfection during the winter months. Disinfectants approved by the United States Department of Agriculture should be used.

Table 3. The Incidence of "Breaks" Observed During the Past Fifteen Years

Year	Number of Flocks	Breaks		Flocks with Less Than 0.5 Percent Infection on First Test	
		Number	Percent	Number	Percent
1940	266	6	2.25	2	33.33
1941	251	5	1.99	4	80.00
1942	255	6	2.35	3	50.00
1943	286	13	4.54	8	61.54
1944	289	17	5.88	13	76.47
1945	340	21	6.18	17	80.95
1946	388	20	5.15	14	70.00
1947	430	17	3.95	9	52.94
1948	425	16	3.76	13	81.25
1949	386	6	1.55	3	50.00
1950	383	18	4.70	16	88.88
1951	381	6	1.57	6	100.00
1952	417	8	1.92	5	62.50
1953	371	7	1.89	4	57.14
1954	338	2	0.59	2	100.00

6. Birds removed from the premises to egg-laying contests, exhibitions, etc., should be held in quarantine and determined free of disease before they are readmitted into the flock.

7. Purchase of stock in the form of adults, chicks, and eggs should be from known pullorum disease-free flocks. The Massachusetts Department of Agriculture, 41 Tremont Street, Boston, should be consulted regarding additions or replacements in the flock.

8. Eggs should not be saved for hatching until after a flock has been tested and all the infected birds removed. Early pullet testing will permit early hatching.

9. Fresh and infertile eggs from unknown or infected sources should not be fed to chickens or exposed to birds or animals, such as crows, sparrows, and skunks, that may carry or spread the infection.

10. Poultrymen should not custom-hatch for untested or infected flocks (including fowl other than chickens).

11. Owners of pullorum disease-free flocks should not permit hatching where infected eggs or stock may be found.

12. Poultrymen should not buy feed in bags that have been used or exposed to infection. (Such bags if properly disinfected will be safe for further use.)

13. Poultrymen should regard fowl other than chickens as a possible source of pullorum infection unless tested and found free from pullorum disease.

14. Poultrymen should not use equipment that has been exposed to or contaminated with infective material unless it is properly cleaned and sterilized or disinfected.

TESTING FOWL OTHER THAN CHICKENS

During the past year, 34,779 samples from fowl other than chickens including 26,302 turkeys, 7,324 pheasants, 978 quail, 66 geese, 50 partridge, 49 guinea fowl, and 10 ducks were tested. No reactors were detected.

NONREACTING AND POSITIVE FLOCKS CLASSIFIED BY COUNTIES

Table 4 reveals that 335 nonreacting flocks, representing 1,170,936 birds were identified in eleven counties. A total of 326 flocks, representing 1,159,567 birds, was 100 percent tested; whereas, 9 flocks, representing 11,369 birds were partially tested.

At the close of the season three flocks, representing 7,154 birds, were classified as positive. These flocks were located in Franklin, Middlesex, and Plymouth Counties.

It is gratifying to note that 98.43 percent of all the birds tested are in 100 percent tested nonreacting flocks. It is hoped that in the near future all flocks tested may be classified in the 100 percent tested nonreacting group.

Table 4. Nonreacting and Positive Flocks Classified by Counties

County	100 Percent Tested		Partially Tested		Totals	
	Flocks	Birds	Flocks	Birds	Flocks	Birds
Nonreacting Flocks						
Barnstable....	5	25,550	—	—	5	25,550
Berkshire....	9	50,866	1	841	10	51,707
Bristol.....	42	145,574	2	2,328	44	147,902
Essex.....	52	200,434	1	1,388	53	201,822
Franklin....	14	27,867	—	—	14	27,867
Hampden....	12	18,409	—	—	12	18,409
Hampshire....	16	34,011	1	2,416	17	36,427
Middlesex....	55	207,494	2	1,905	57	209,399
Norfolk.....	28	119,813	—	—	28	119,813
Plymouth....	52	178,564	—	—	52	178,564
Worcester....	41	150,985	2	2,491	43	153,476
Totals....	326	1,159,567	9	11,369	335	1,170,936
Positive Flocks						
Franklin....	1	4,647	—	—	1	4,647
Middlesex....	—	—	1	610	1	610
Plymouth....	1	1,897	—	—	1	1,897
Totals....	2	6,544	1	610	3	7,154

COMPARISON OF 1952-53 AND 1953-54 TESTING

In table 5 are listed the testing data for the past two seasons. Fewer flocks but more birds and samples were tested in 1953-54 than in 1952-53. The percentage of reactors was considerably less this past season. Fewer nonreacting flocks were detected in 1953-54 but the total number of birds in nonreacting flocks was greater in 1953-54 than in 1952-53.

These results reveal a definite progress and it is apparent that pullorum infection is gradually but slowly being eliminated from our poultry population. Every poultryman and hatcheryman should recognize that pullorum disease can be eliminated from the entire poultry population if adequate measures for its eradication are adopted and followed.

Table 5. Comparison of 1952-53 and 1953-54 Testing

County	Flocks	Birds	Tests	Positive Tests Percent	Non- reacting Flocks
1952-1953 Season					
Barnstable...	4	8,343	8,343	0.00	4
Berkshire...	7	29,727	29,727	0.00	7
Bristol...	50	150,069	151,564	0.003	49
Dukes...	1	5,681	5,681	0.00	1
Essex...	53	173,393	176,189	0.002	53
Franklin...	21	40,557	40,557	0.29	20
Hampden...	11	16,141	16,141	0.00	11
Hampshire...	18	41,259	42,709	0.002	18
Middlesex...	65	220,060	225,978	0.16	62
Norfolk...	33	127,081	127,081	0.00	33
Plymouth...	59	186,420	187,914	0.0005	59
Worcester...	49	156,628	156,855	0.00	49
Totals...	371	1,155,359	1,168,739	0.04	366
1953-54 Season					
Barnstable...	5	25,550	25,550	0.00	5
Berkshire...	10	51,707	51,707	0.00	10
Bristol...	44	147,902	148,990	0.00	44
Essex...	53	201,822	207,140	0.007	53
Franklin...	15	32,514	34,434	0.006	14
Hampden...	12	18,409	18,409	0.00	12
Hampshire...	17	36,427	36,427	0.00	17
Middlesex...	58	210,009	215,640	0.02	57
Norfolk...	28	119,813	119,813	0.00	28
Plymouth...	53	180,461	183,573	0.002	52
Worcester...	43	153,476	153,476	0.00	43
Totals...	338	1,178,090	1,195,159	0.004	335

THIRTY-FOUR YEAR TESTING SUMMARY

A summary of testing results for thirty-four years of testing is listed in table 6. The results reveal that this past year the percentage of reactors was the lowest in the testing history of Massachusetts. Also the percentage of total birds tested and located in nonreacting flocks was the highest ever attained in the thirty-four years of testing.

Table 6. Thirty-Four-Year Pullorum Disease Testing Summary

Season	Flocks	Birds	Total Tests	Positive Tests Percent	Non- reacting Flocks	Birds in Non- reacting Flocks	
						Number	Percent
1920-21	108	24,718	24,718	12.50	25	2,414	9.77
1921-22	110	29,875	29,875	12.65	27	4,032	13.50
1922-23	121	33,602	33,602	7.60	29	5,400	16.07
1923-24	139	59,635	59,635	6.53	38	11,082	18.58
1924-25	156	66,503	66,503	2.94	79	25,390	38.18
1925-26	201	67,919	67,919	2.31	124	33,615	49.49
1926-27	249	127,327	127,327	4.03	114	40,269	31.63
1927-28	321	190,658	232,091	6.52*	138	80,829	42.39
1928-29	413	254,512	304,092	4.25*	228	153,334	60.25
1929-30	460	331,314	386,098	2.17	309	203,038	66.97
1930-31	447	356,810	402,983	1.47	328	267,229	74.89
1931-32	455	377,191	420,861	0.90	355	298,534	79.15
1932-33	335	296,093	300,714	0.47	276	238,074	80.41
1933-34	262	263,241	284,848	0.53	229	212,782	80.83
1934-35	244	281,124	301,887	0.39	213	251,778	89.56
1935-36	252	329,659	344,081	0.30	230	315,215	95.95
1936-37	307	448,519	561,762	0.37	281	424,431	94.63
1937-38	308	480,227	497,769	0.17	286	457,466	95.26
1938-39	355	571,065	615,205	0.34	327	469,134	82.15
1939-40	346	573,000	673,222	0.51	332	497,356	86.80
1940-41	309	527,328	538,589	0.09	299	492,475	93.39
1941-42	366	653,080	662,715	0.27	350	591,628	90.59
1942-43	332	637,666	649,137	0.48	317	600,607	94.19
1943-44	413	762,066	791,596	0.11	386	721,229	94.64
1944-45	458	836,481	943,987	0.12	431	792,551	94.75
1945-46	538	1,125,737	1,225,594	0.12	513	1,085,726	96.45
1946-47	562	1,156,147	1,238,983	0.13	534	1,112,043	96.19
1947-48	494	1,219,957	1,272,547	0.10	476	1,185,852	97.20
1948-49	458	1,179,481	1,213,073	0.04	452	1,171,363	99.31
1949-50	475	1,360,865	1,444,364	0.06	465	1,344,860	98.82
1950-51	448	1,358,540	1,394,192	0.05	442	1,339,068	98.57
1951-52	417	1,343,955	1,370,430	0.016	412	1,324,195	98.53
1952-53	371	1,155,359	1,168,739	0.04	366	1,146,932	99.27
1953-54	338	1,178,090	1,195,159	0.004	335	1,170,936	99.39

*Based on total birds tested: 1927-28, 190,658 birds; 1928-29, 254,512 birds

COMMENTS AND SUGGESTIONS

Annual Testing of All Birds on the Premises: During the past year 10 flocks, representing 11,979 birds, were partially tested. Only one of the 10 flocks was found positive. It is quite likely that the other nine flocks would have qualified for an official grade if they had been 100 percent tested with no reactors. This

would have permitted the flock owners to sell hatching eggs and chicks with an official label and thereby give them a greater market for their stock. Also, by testing all the birds over five months of age one is able to determine the true pullorum status of the flock.

The testing results also reveal that 21 flocks, representing 40,963 birds, were tested intermittently. It is recognized that in some instances flocks drop out of the testing program because of lack of demand for hatching eggs or chicks. Whatever the reason may be for discontinuing testing for a period of time, it is recommended that every possible precaution be observed to prevent the introduction of infection. The test serves only as a means of detecting infection, but it does not prevent its introduction into a flock. The responsibility must be accepted entirely by the poultryman. Therefore, if the flock is not tested the flock owner should adopt the same measures for maintaining a free flock as the flock owner who has a clean flock. It is hoped that all breeding flock owners will exert every effort to test their flocks annually and to test all birds more than five months of age before they are used for hatching purposes.

It should be re-emphasized that the laboratory is organized to test during the entire year. However, the following summary reveals that there is a definite peak of testing.:

Months	Number of Tests
April, 1953	39,464
May	30,103
June	64,936
July	63,232
August	107,553
September	142,872
October	184,459
November	171,868
December	147,727
January	136,401
February	91,490
March	48,558
April, 1954	1,275
	<hr/> 1,229,938

It is very difficult or almost impossible to employ personnel for only a few months. Therefore, it is requested that certain flock owners who may have birds maturing in the slack months of testing have such birds tested during those months. They will greatly facilitate the work in the field and laboratory, and they will receive better service.

Filing Applications for Testing: Too many flock owners are not returning their applications for testing but instead filing a request for testing by letter. Too often when this is done the information provided is incomplete and frequently leads to inefficient and a more costly service. It is hoped that the flock owners will cooperate on this point and likewise file their applications early. The applications are processed in the order received, unless for some reason, it appears expedient to deviate from this procedure.



Inspection of Commercial Fertilizers and Agricultural Lime Products

BY

Fertilizer Control Service Staff

Massachusetts Agricultural Experiment Station

— May 10, 1955 —



This is the eighty-first report of the Massachusetts Fertilizer Control made in accordance with Chapter 94, Sections 250 to 261, inclusive, of Massachusetts General Laws 1920, as amended by Chapter 67, Acts of 1933.

INSPECTION OF COMMERCIAL FERTILIZERS AND AGRICULTURAL LIME PRODUCTS FOR THE SEASON OF 1954

BY FERTILIZER CONTROL SERVICE STAFF

John W. Kuzmeski, *Research Professor, Official Chemist*
Albert F. Spelman, *Associate Research Professor*
C. Tyson Smith, *Associate Research Professor, Microscopist*
Bertram Gersten, *Assistant Research Professor*
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George Caldes, *Research Instructor*
Joseph Conklin, *Inspector*
Edward F. Vlach, *Technical Assistant*
Cora B. Grover, *Principal Clerk*

PERTINENT FACTS RELATING TO MASSACHUSETTS FERTILIZER LAW

Commercial Fertilizers

Registration is required annually on January 1.

Registration fee is \$8 for each element: nitrogen, phosphoric acid, potash, magnesiumia.

Label must show:

Net weight of fertilizer

Name, brand or trade mark, and grade

Name and address of manufacturer

Guaranteed analysis: nitrogen, available phosphoric acid, water soluble potash. A guarantee of total phosphoric acid may be used instead of available phosphoric acid for bone, untreated phosphate rock, tankage, dried and pulverized manures, ground seeds, and wood ashes.

Tonnage reports are required semi-annually, on January 1 and July 1.

Tonnage fee: 6 cents per ton of 2,000 pounds

Lime Products

Registration is required annually on January 1.

Registration fee: \$12 for each brand.

Label must show:

Net weight of product

Name, brand or trade mark, and form of lime

Name and address of manufacturer

Guaranteed analysis: calcium oxide, magnesium oxide, carbonates of calcium and magnesium, or calcium sulfate (in gypsum or land plaster)

Make checks payable to Massachusetts Agricultural Experiment Station and send correspondence to

JOHN W. KUZMESKI
Massachusetts Agricultural Experiment Station
Amherst Mass.

FERTILIZER TONNAGE

Tonnage of Fertilizer Sold in Massachusetts

	1952		1953	
	Jan. 1 to July 1	July 1 to Dec. 31	Jan. 1 to July 1	July 1 to Dec. 31
Mixed fertilizers	61,585	9,300	58,546	10,106
Fertilizer chemicals and materials unmixed	9,283	4,230	10,358	5,969
Pulverized animal manures	1,503	528	1,644	336
Totals	72,371	14,058	70,548	14,411

Tonnage of Mixed Fertilizers, January 1 to December 31, 1953

Grade	Tonnage		Brands	Grade*	Tonnage		Brands
	Jan. 1 to July 1	July 1 to Dec. 31			Jan. 1 to July 1	July 1 to Dec. 31	
5-10-10	15,445	2,160	32	0-20-20	686	249	7
6-8-8	7,414	191	12	4-12-4	635	68	6
5-8-7	6,816	611	21	8-6-2	549	141	9
5-10-5	4,738	648	30	3-12-12	490	242	—
7-7-7	4,435	1,182	17	6-10-4	464	151	9
8-16-16	2,227	874	10	0-12-24	397	212	—
10-10-10	2,068	651	6	5-5-15	247	—	—
0-10-20	1,778	600	10	10-6-4	123	47	6
0-14-14	1,658	320	11	8-12-16	117	77	—
6-8-8	1,321	3	9	15-30-15	18	1	—
8-8-8	815	56	8	Miscellaneous	5,341	1,410	—
8-6-4	764	222	5	Totals	58,546	10,106	306

*The grade represents the plant food guarantee and is expressed in the order of nitrogen, available phosphoric acid, potash.

Tonnage of Unmixed Materials, January 1 to December 31, 1953

Material	Tonnage		Brands
	Jan. 1 to July 1	July 1 to Dec. 31	
Superphosphate	3,627	1,347	12
Process tankage and activated sewage	1,752	1,282	—
Pulverized animal manures	1,644	336	31
Nitrate of soda	933	274	—
Cottonseed meal	856	150	—
Ammonium nitrate	692	237	—
Bone meal	619	221	17
Muriate of potash	618	142	9
Castor pomace	374	89	6
Cyanamid	204	21	—
Rock phosphate	130	112	—
Sulfate of ammonia	20	—	7
Miscellaneous	533	94	—
Totals	12,002	4,305	118

MIXED FERTILIZERS

Deficiency Statistics for Mixed Fertilizers

Manufacturer	Number of Samples		Number of Tests				
	Analyzed	With No Deficiencies	Totals	Loss than $\frac{1}{4}$ Per Cent Below Guarantee	Between $\frac{1}{4}$ and $\frac{1}{2}$ Per Cent Below Guarantee	Between $\frac{1}{2}$ and $\frac{3}{4}$ Per Cent Below Guarantee	More than $\frac{3}{4}$ Per Cent Below Guarantee
American Agricultural Chemical Co. . .	44	28	134	7	3	6	2
Apothecaries Hall Co.	19	18	57	0	0	0	1
Armour Fertilizer Works.	19	13	58	3	4	0	0
F. A. Bartlett Tree Expert Co.	1	1	3	0	0	0	0
Joseph Breck & Sons Corp.	4	1	13	1	1	0	1
Carbola Chemical Co., Inc.	1	1	3	0	0	0	0
J. J. Chesnicka Landscape Service. . . .	1	1	3	0	0	0	0
Clinton Nurseries	2	2	6	0	0	0	0
Consolidated Rendering Co.	38	28	110	2	6	0	6
Davison Chemical Corp.	9	7	25	0	1	0	0
E. I. du Pont de Nemours & Co.	1	1	3	0	0	0	1
Eastern States Farmers' Exchange, Inc. .	21	13	79	2	5	0	2
Essex County Cooperative Farming Ass'n. .	4	3	14	1	0	0	0
Excell Laboratories, Inc.	1	1	3	0	0	0	0
Faesy & Besthoff, Inc.	2	0	6	0	2	0	0
Farm Bureau Assn.	4	4	15	0	0	0	0
Fox Point Chemical Co.	27	19	86	0	1	4	3
Frank's Market Garden.	1	0	3	0	0	1	0
Frost & Higgins Co.	1	0	3	1	0	0	0
Garden Research Laboratories.	2	0	0	3	0	0	1
Goulard & Oleno, Inc.	3	2	6	0	0	0	1
C. L. Hadynson Tree Service	1	1	3	0	0	0	0
Heller Greenhouse Laboratories.	1	0	3	0	0	0	2
A. H. Hoffman, Inc.	2	2	6	0	0	0	0
Hydroponic Chemical Co., Inc.	1	1	3	0	0	0	0
Hy-Trous Corp.	1	1	3	6	0	0	0
International Minerals & Chemical Corp. .	19	11	70	4	5	1	0
Lebanon Chemical Corp.	4	2	12	0	2	0	0
Luxamin Company of America	2	1	6	0	0	0	1
Monsanto Chemical Co.	1	1	3	0	0	0	0
Old Deerfield Fertilizer Co., Inc.	27	25	80	0	2	0	0
Olds & Whipple, Inc.	10	10	30	0	0	0	0
Oswego Soy Products Corp.	1	1	3	0	0	0	0
Pedigreed Seed Co.	1	1	3	0	0	0	0
Charles C. Penn Co.	1	1	3	0	0	0	0
Plantabbs Corp.	1	1	3	0	0	0	0
Ra-Pid-Gro Corp.	1	0	3	0	0	1	1
Reddi-Mix Products Co.	3	1	9	0	0	0	4
Rogers & Hubbard Co.	19	17	55	1	2	0	0
Rose Manufacturing Co.	1	1	3	0	0	0	0
O. M. Scott & Sons Co.	2	2	6	0	0	0	0
Sears, Roebuck & Co.	8	4	24	0	2	0	0
Stern's Garden Products, Inc.	1	0	3	0	1	0	0
Stim-U-Plant Laboratories Co.	2	1	6	1	0	0	0
Swift & Co. Plant Food Division. . . .	9	4	27	3	0	1	0
Universal Chemical Co.	1	1	3	0	0	0	0
U. S. Chemical Products Corp.	1	0	3	1	1	0	0
Valley Feed & Supply Co., Inc.	2	2	6	0	0	0	0
Victor Chemical Works.	1	1	3	0	0	0	0
Woodruff Fertilizer Works.	1	1	3	0	0	0	0
Totals.	330	237	1,015	30	38	14	30

Mixtures Showing a Commercial Shortage of \$1 or More per Ton

Manufacturer and Brand	Nitrogen Found		Available Phosphoric Acid Found	Water Soluble Potash (K ₂ O) Found	Approximate Commercial Shortage per Ton
	Water Insoluble Organic	Total			
American Agricultural Chemical Co.					
AA Quality 0-15-30.....	—	—	15.30	27.20	\$1.27
Agrico for Corn 4-12-4.....	—	3.94	11.29	4.00	1.82
Agrico for Tobacco 6-3-6 (a)...	3.25	5.74	2.77	6.20	3.48
Agrico for Top Dressing 10-10-10.....	—	9.26	10.55	9.60	1.89
Armour Fertilizer Works					
Big Crop 8-16-16.....	—	7.68	16.20	15.60	1.12
Consolidated Rendering Co.					
Corenco 0-20-20.....	—	—	18.91	19.54	2.77
Corenco 0-20-20.....	—	—	19.62	18.85	1.98
Corenco 5-5-15.....	—	5.09	3.15	15.40	2.99
Davison Chemical Corp.					
Davco Granulated 0-15-30.....	—	—	12.01	32.80	3.34
Dewitt Chemical Co.					
Chem Grow Plant Food 10-52-17.....	—	9.47	47.00	15.40	*
Fox Point Chemical Co.					
Old Fox Brand 5-10-10, 2% water soluble magnesium oxide (a).....	—	5.02	8.80	10.90	1.50
Garden Research Laboratories					
RX-15 15-30-15, 0.816% mag- nesium oxide (a) (b).....	—	14.63	28.85	16.80	2.00
Heller Greenhouse Laboratories					
Heller-Gro 15-15-15.....	—	13.77	12.55	16.40	*
Reddi-Mix Products Co.					
Reddi-Mix Rose Food 16-20-0 (c).....	—	4.78	14.17	—	*
Reddi-Mix Rose Food 16-20-0 (c).....	—	4.49	14.00	—	*
Sears, Roebuck & Co.					
Cross Country Rose Food 5-10-5.....	2.15	5.66	13.28	2.11	2.00
Swift & Co. Plant Food Division					
Red Steer 10-10-10.....	—	9.74	9.02	10.20	2.98

* Since this material is sold in small packages, a calculation of the shortage per ton is not feasible. Deficiency found is great enough for inclusion of this material with seriously deficient brands.

^a See table of "Mixtures Substantially Complying with Guarantees."

^b Magnesium oxide guaranteed, 0.816%; found, 0.80%.

^c Withdrawn from sale.

EXPLANATION OF TABLE OF ANALYSES

Guarantee. The plant food guarantee or the grade of each fertilizer is made a part of the trade name under the heading "Name of Manufacturer and Brand" and is expressed as nitrogen, available phosphoric acid, and water soluble potash in that order.

Mixtures Substantially Complying with the Guarantee. In addition to those fertilizers that meet their guarantees in every respect, this table includes also a list of those mixtures that have one or more elements below the guaranteed percentage but have a shortage of less than \$1 per ton.

This table, in addition to the data mentioned in the next paragraph, contains only results of analytical tests pertaining to the average amount of water insoluble nitrogen present in some brands, since this information is of value to tobacco growers and other users of fertilizers containing a high percentage of this form of nitrogen.

Potash Forms. Tests for chlorine are made only on tobacco mixtures and on those fertilizers that carry a guarantee of potash in forms other than muriate. When the amount of chlorine present in any brand exceeds the tolerance allowed for that brand, this fact is indicated by a footnote.

Mixtures Substantially Complying with Guarantees

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
American Agricultural Chemical Co.		
AA Quality 0-14-14.....	1	—
AA Quality 0-20-20.....	2	—
AA Quality 5-8-7.....	2	—
AA Quality 5-8-10.....	1	—
AA Quality 5-10-10.....	3	—
AA Quality 7-7-7.....	3	—
AA Quality 8-15-16.....	1	—
Agrico Phosphate & Potash 0-10-20.....	1	—
Agrico for Seeding Down 3-12-12.....	2	—
Agrico for New England 5-8-7, 2% magnesium oxide.....	4	—
Agrico Rose Food 5-9-6.....	1	1.01
Agrico for Cranberries 5-10-5.....	1	—
Agrico for Gardens 5-10-5.....	1	—
Agrico for Onions 5-10-5.....	2	—
Agrico for Potatoes 5-10-10, 2% magnesium oxide.....	2	—
Agrico for Tobacco 6-3-6 ^a	1 ^b	3.01
Agrico for Turf 6-8-2.....	2	2.46
Agrico for Broadleaf Evergreens 6-10-4.....	1	.77
Agrico Country Club 6-10-4.....	2	.38
Agrico for Lawns, Trees & Shrubs 6-10-4.....	2	1.41
Agrico for Cranberries 7-7-7.....	1	—
Agrico for Top Dressing 7-7-7.....	3	—
Agrico Country Club 8-6-4.....	1	1.85
Apothecaries Hail Co.		
Green-Gro 6-7-4.....	1	.54
Liberty 0-10-20.....	1	—
Liberty 0-20-20.....	1	—
Liberty Tobacco Mixture 5-5-15.....	1	—
Liberty High Grade Market Gardener 5-8-7.....	2	—
Liberty 5-10-5.....	2	—
Liberty 5-10-10.....	2	—
Liberty Tobacco Mixture 6-3-6.....	3 ^b	3.14
Liberty Tobacco Mixture with Cotton Hull Ashes 6-3-6.....	1 ^b	3.26
Liberty 6-8-8, 2% magnesium oxide.....	1 ^b	—
Liberty Super Spud Special Potato 6-8-8, 2% magnesium oxide.....	1 ^b	—
Liberty Special for Fruit and Grass 7-7-7.....	2	—
Liberty 8-8-8.....	1	—
Armour Fertilizer Works		
Big Crop 0-20-0.....	1	—
Big Crop 5-8-7.....	2	—
Big Crop 5-8-7, 2% magnesium oxide.....	1	—
Big Crop 5-10-10.....	2	—
Big Crop 5-10-10, 2% magnesium oxide.....	1	—
Big Crop 7-7-7.....	2	—
Big Crop 10-10-10.....	1	—
Gold Bond Tobacco Grower 6-3-6.....	3 ^b	2.70
Vertagreen Plant Food 5-10-5.....	2	—
Vertagreen Plant Food for Commercial Crops 6-12-6.....	1	—
Vertagreen Plant Food for Commercial Crops 6-12-12.....	2	—
Vertagreen Plant Food for Commercial Crops 8-8-8.....	1	—
Vertagreen Plant Food for Professional Use 10-6-4.....	1	1.37

^a See table of "Mixtures Showing a Commercial Shortage of \$1 or more per Ton."

^b Potash in forms other than muriate.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
F. A. Bartlett Tree Expert Co.		
Bartlett Green Tree Food 6-8-6.....	1	.61
Joseph Bruck & Sons Corp.		
Brexone Garden-Gro 5-10-10, 2% magnesium oxide.....	1	—
Brexone Turf-Gro 8 6-2.....	1	1.00
Quick-Life 16-32-16.....	1	—
Quick-Life 14-30-16 (old stock).....	1	—
Carbola Chemical Co., Inc.		
CCC Triple 20 Plant Food 20-20-20.....	1	—
J. J. Chesnicka Landscape Service		
Sod Builder 9-7-4.....	1	3.69
Clinton Nurseries		
New Era Rose Food 5-10-5.....	1	.17
New Era African Violet Food 5-12-9.....	1	.14
Consolidated Rendering Co.		
Corenco 0-10-20 Hay & Pasture Special.....	1	—
Corenco 9-14-14 Top Dresser.....	2	—
Corenco 4-12-4 Complete Manure.....	2	—
Corenco 4-12-16 Ladino Special.....	1	—
Corenco 5-8-7 Potato & General Crop.....	4	—
Corenco 5-10-5 Home Garden.....	2	—
Corenco Onion Special—Super Truck 5-10-5.....	2	—
Corenco 5-10-5 Rose Special.....	1	1.18
Corenco Peerless Potato 5-10-10.....	4	—
Corenco 5-10-10, 2% water soluble magnesium oxide.....	1	—
Corenco 6-3-6 Perfection Tobacco Grower.....	1	3.74
Corenco 6-3-6 Premium Tobacco Grower.....	2	2.66
Corenco 7-7-7 Complete Fruit & Top Dressing.....	3	—
Corenco 8-6-4 Landscape.....	3	.89
Corenco 8-6-4 Turf Green.....	2	3.38
Corenco 10-6-4.....	1	.55
Corenco 10-10-10.....	1	—
Corenco Spurz-on 3.5-3.5-1.5.....	2	1.90
Davison Chemical Co. Division of W. R. Grace & Co.		
Davco Granulated 4-12-16.....	1	—
Davco Granulated 5-8-7.....	1	—
Davco Granulated 5-10-5.....	2	—
Davco Granulated 5-10-10.....	1	—
Davco Granulated 7-7-7.....	1	—
Davco Granulated 8-16-16.....	1	—
Davco Granulated 10-10-10.....	1	—
E. I. du Pont de Nemours & Co.		
DuPont Soluble Plant Food 19-22-16.....	1	—

^b Potash in forms other than muriate.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Eastern States Farmers' Exchange, Inc.		
Eastern States 0-15-30.....	2	—
Eastern States 0-20-20.....	1	—
Eastern States 5-10-10, 1% magnesium oxide.....	4	—
Eastern States 5-15-15, 1% magnesium oxide.....	2	—
Eastern States 8-4-8 Tobacco, 2% magnesium oxide.....	2 <i>b</i>	2.98
Eastern States 8-12-12, 2% magnesium oxide.....	1	—
Eastern States 8-12-12 L. C., 2% magnesium oxide.....	1 <i>b</i>	—
Eastern States 8-12-16, 1% magnesium oxide.....	1	—
Eastern States 8-16-16, 1% magnesium oxide.....	3	—
Eastern States 10-10-10, 1% magnesium oxide.....	3	—
Eastern States Starter 64 16-32-16.....	1	—
Essex County Cooperative Farming Association		
S-X Brand 5-8-7.....	1	—
S-X Brand 5-10-10 regular, 1% magnesium oxide.....	1	—
S-X Brand 5-10-10, 2% water soluble magnesium oxide.....	1	—
S-X Brand 7-7-7.....	1	—
Excell Laboratories, Inc.		
New Plant Life 2-1-2.....	1	—
Faesy & Besthoff, Inc.		
F & B Broadleaf High Organic 6-16-4.....	1	.06
F & B Rose Food 8-10-4.....	1	4.56
Farm Bureau Association		
Farm Bureau 5-8-7, 2% magnesium oxide.....	1	—
Farm Bureau 5-10-10, 2% magnesium oxide.....	1	—
Farm Bureau 7-7-7, 2% magnesium oxide.....	1	—
Farm Bureau 8-6-2.....	1	1.25
Fox Point Chemical Co.		
Old Fox Brand 4-16-20.....	1	—
Old Fox Brand 5-8-7, 2% magnesium oxide.....	1	—
Old Fox Brand 5-8-10.....	6	—
Old Fox Brand Garden Food 5-10-5.....	1	—
Old Fox Brand 5-10-10, 1% magnesium oxide.....	1	—
Old Fox Brand 5-10-10, 2% water soluble magnesium oxide (a).....	1	—
Old Fox Brand 6-8-8.....	4	—
Old Fox Brand 7-7-7.....	1	—
Old Fox Brand 7-7-7, 2% magnesium oxide (old stock).....	1	—
Old Fox Brand Turf Food 8-6-2.....	2	.89
Old Fox Brand 8-8-8.....	7	—
Frank's Market Garden		
For More Growth (FMG) .9-9-9.....	1	.69
Frost & Higgins Co.		
Special Tree & Shrub Food 8-6-4.....	1	2.94
Garden Research Laboratories		
RX-15 15-30-15, 0.815% magnesium oxide (a).....	1	—

^aSee table of "Mixtures Showing a Commercial Shortage of \$1 or more per Ton."

^bPotash in forms other than muriate.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Goulard & Oleno, Inc.		
G & O Rhodo-Azalea Food 3-20-3.....	1	.91
G & O BuPh Food 5-6-15.....	1	1.49
G & O Rose Food 7-8-5.....	1	1.63
L. Harvorson Tree Service		
Tree Food 8-6-2.....	1	3.28
A. H. Hoffman, Inc.		
Azalea and Evergreen Food 4-6-10.....	1	1.70
Rose Food 5-10-5.....	1	1.05
Hydroponic Chemical Co., Inc.		
Hydrox Plant Food 7-6-19.....	1	—
Hy-Trous Corp.		
Hy-Trous 4-8-4.....	1	—
International Minerals & Chemical Corp.		
International 0-10-20.....	1	—
International 0-14-14.....	1	—
International 4-12-16, 1% magnesium oxide.....	2	—
International 5-8-7, 1% magnesium oxide.....	1	—
International 5-10-5, 1% magnesium oxide.....	1	—
International 5-10-10, 1% magnesium oxide.....	2	—
International Potato 5-10-10, 2% water soluble magnesium oxide.....	2	—
International Tobacco 6-3-6, 2% magnesium oxide.....	2 4	2.89
International 6-12-12, 2% water soluble magnesium oxide.....	1	—
International 7-7-7, 1% magnesium oxide.....	2	—
International 8-6-2, 1% soluble magnesium oxide.....	1	.64
International 8-16-16.....	1	—
International 10-10-10, 1% magnesium oxide.....	2	—
Lebanon Chemical Corp.		
Gardenrite 5-10-5.....	1	—
Rose Food 7-8-5.....	1	1.09
Hi-Organic 8-8-8.....	1	2.02
Farmrite Spray-Gro 20-20-20.....	1	—
Loamium Company of America		
Loamium 5-10-5.....	1	—
Gro-Plus 16-16-16.....	1	—
Monsanto Chemical Co.		
Folium 20-20-20.....	1	—

^b Potash in forms other than muriate.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Old Deerfield Fertilizer Co., Inc.		
Old Deerfield 0-12-24.....	1	—
Old Deerfield 0-14-14.....	1	—
Old Deerfield 0-20-20.....	1	—
Old Deerfield 4-12-8.....	1	—
Old Deerfield 4-12-16.....	1	—
Old Deerfield 5-5-15 Tobacco Starter.....	1	—
Old Deerfield 5-8-7 All Crop.....	2	—
Old Deerfield 5-8-7, 2% magnesium oxide.....	1 b	—
Old Deerfield 5-10-5 Trucker's Special.....	1	—
Old Deerfield 5-10-10 Potato.....	2	—
Old Deerfield 5-10-10, 2% magnesium oxide, potash other than muriate.....	1 b	—
Old Deerfield Complete Tobacco 6-3-6.....	3 b	3.37
Old Deerfield Complete Tobacco 6-4-7.....	3 b	3.45
Old Deerfield Lawnshrub 6-5-5.....	1	1.64
Old Deerfield 6-8-8 Special Potato.....	1	—
Old Deerfield 7-7-7 Grass Top Dressing.....	2	—
Old Deerfield 8-8-8.....	2	—
Old Deerfield 8-16-16.....	1	—
Old Deerfield 10-10-10.....	1	—
Olds & Whipple, Inc.		
O & W 5-8-7 Potato & General Purpose.....	2	—
O & W 5-10-5.....	2	—
O & W 5-10-5 Special.....	1	—
O & W 5-10-10 Potato.....	2	—
O & W Blue Label Tobacco 6-3-6, Potash from Cotton Hull Ash	2 b	2.84
O & W 7-7-7 Top Dressing & Grass.....	1	—
Oswego Soy Products Corp.		
Feralon 6-10-4.....	1	2.91
Pedigreed Seed Co.		
Loft's Lawn Food 8-12-4 (old stock).....	1	1.42
Charles C. Penn Co.		
Ferti-Flora 3-3-3.....	1	—
Plantabbs Corp.		
Fulton's Plantabbs 11-15-20.....	1	—
Ra-Pid-Gro Corp.		
Ra-Pid-Gro 23-21-17.....	1	—
Reddi-Mix Products Co.		
Reddi-Mix 5-10-5.....	1	—

b Potash in forms other than muriate.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Rogers & Hubbard Co.		
Gro-Fast Acid Fertilizer 4-10-4.....	1	1.39
Gro-Fast Plant Food 5-10-5.....	1	1.07
Gro-Fast Rose Food 7-10-5.....	1	1.44
Hubbard Dairy 0-10-20.....	1	—
Hubbard Alfalfa 0-14-14.....	1	—
Hubbard Corn 4-12-4.....	1	.29
Hubbard Vegetable 5-8-7.....	1	.35
Hubbard Garden 5-10-5.....	1	.34
Hubbard General Crop 5-10-10.....	2	.22
Hubbard High Potash 5-10-10.....	1	1.36
Hubbard Tobacco Grower 6-3-6.....	1 b	3.48
Hubbard Potato 6-8-8.....	1	.21
Hubbard Top Dressing 7-7-7.....	2	.19
Hubbard Golf Course 8-6-2.....	1	1.70
Hubbard Double Strength 8-16-16.....	1	—
Hubbard Golf Course 10-6-4.....	1	3.17
Hubbard Hi-Top 10-10-10.....	1	.29
Rose Manufacturing Co.		
Tri-Ogen Rose Food 5-10-5.....	1	.50
O. M. Scott & Sons Co.		
Weed & Feed 7-11-5.....	1	3.15
Turf Builder 9-7-4.....	1	2.38
Sears, Roebuck & Co.		
Cross Country Economy 3-12-6.....	1	—
Cross Country Bulb Food 4-12-8.....	1	.25
Cross Country Plant Food 5-10-5.....	1	—
Cross Country Azalea Food 7-7-7.....	1	1.35
Cross Country Liquid Plant Food 10-5-5.....	1	—
Cross Country Evergreen Food 10-6-4.....	1	.54
Cross Country Wat-R-Mix 20-20-20.....	1	—
Stern's Garden Products, Inc.		
Miracle-Gro 15-30-15.....	1	—
Stimuplant Laboratories Co.		
Stim-U-Plant African Violet Food 5-8-7.....	1	—
Stim-U-Plant Plant Tablets 11-12-15.....	1	—
Swift & Co. Plant Food Division		
Blenn 5-10-5.....	1	—
Brimm 5-10-10.....	1	—
Red Steer 5-8-7.....	1	—
Red Steer 5-10-10.....	1	—
Red Steer 7-7-7.....	1	—
Vigoro 5-10-5.....	1	—
Instant Vigoro 19-28-14.....	1	—
Universal Chemical Co.		
Electra Plant Food 5-10-3.....	1	3.28

b Potash in forms other than muriate.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
U. S. Chemical Products Corp.		
Thrive Plant Food 5-10-5.....	1	—
Valley Feed & Supply Co., Inc.		
Adorna 3-1-1.....	2	3.36
Victor Chemical Works		
Take-Hold 10-52-17.....	1	—
Woodruff Fertilizer Works, Inc.		
Woodruff's 5-8-7.....	1	—

Mixtures Carrying Magnesium Oxide Guarantees

Manufacturer Brand Name and Grade	Percent Found	
	Total Magnesium Oxide	Water-Soluble Magnesium Oxide
American Agricultural Chemical Co.		
Agrico for New England 5-8-7, 2% magnesium oxide.....	{ 2.39 2.03 2.18 2.03	1.09 1.22 1.13 1.00
Agrico for Potatoes 5-10-10, 2% magnesium oxide.....	{ 2.25 2.10	1.27 .95
Apothecaries Hall Co.		
Liberty 6-8-8, 2% magnesium oxide.....	3.55	2.46
Liberty Super Spud Special Potato 6-8-8, 2% magnesium oxide.....	2.32	.95
Armour Fertilizer Works		
Big Crop 5-8-7, 2% magnesium oxide.....	1.88	1.00
Big Crop 5-10-10, 2% magnesium oxide.....	2.54	1.67
Joseph Breck & Sons Corp.		
Brexone Garden-Gro 5-10-10, 2% magnesium oxide.....	4.13	2.98
Consolidated Rendering Co.		
Corenco 5-10-10, 2% water soluble magnesium oxide.....	2.46	1.72
Eastern States Farmers' Exchange, Inc.		
Eastern States 5-10-10, 1% magnesium oxide.....	{ 2.90 3.05 3.04 3.48	1.00 1.22 1.77 1.54
Eastern States 5-15-15, 1% magnesium oxide.....	{ 1.52 1.45	.81 .77
Eastern States 8-4-8 Tobacco, 2% magnesium oxide.....	{ 5.87 4.35	3.44 2.40
Eastern States 8-12-12, 2% magnesium oxide.....	2.54	2.54

Mixtures Carrying Magnesium Oxide Guarantees—Concluded

Manufacturer Brand Name and Grade	Percent Found	
	Total Magnesium Oxide	Water-Soluble Magnesium Oxide
Eastern States Farmers' Exchange, Inc.—Concluded		
Eastern States 8-12-12 L. C., 2% magnesium oxide.	3.18	2.04
Eastern States 8-12-16, 1% magnesium oxide.....	2.18	1.95
Eastern States 8-16-16, 1% magnesium oxide.....	1.81 1.67 1.15	1.36 1.27 1.04
Eastern States 10-10-10, 1% magnesium oxide.....	1.23 1.38 1.59	.77 .68 1.00
Essex County Cooperative Farming Association		
S-X Brand 5-10-10 regular, 1% magnesium oxide...	1.23	.50
S-X Brand 5-10-10, 2% water soluble magnesium oxide.	4.35	2.95
Farm Bureau Association		
Farm Bureau 5-8-7, 2% magnesium oxide.....	2.97	.41
Farm Bureau 5-10-10, 2% magnesium oxide.....	2.03	1.50
Farm Bureau 7-7-7, 2% magnesium oxide....	2.39	.59
Fox Point Chemical Co.		
Old Fox Brand 5-8-7, 2% magnesium oxide.....	1.27	.64
Old Fox Brand 5-10-10, 1% magnesium oxide.....	1.09	.45
Old Fox Brand 5-10-10, 2% water soluble magnesium oxide.....	2.18 .94	.98 .68
Old Fox Brand 7-7-7, 2% magnesium oxide (old stock)	1.74	.77
Garden Research Laboratories		
RX-15 15-30-15, 0.816% magnesium oxide..	—	.77
International Minerals & Chemical Corp.		
International 4-12-16, 1% magnesium oxide.....	1.52 1.16	.81 1.09
International 5-8-7, 1% magnesium oxide.....	1.38	.45
International 5-10-5, 1% magnesium oxide....	1.67	1.00
International 5-10-10, 1% magnesium oxide....	1.23 1.52	.87 .91
International Potato 5-10-10, 2% water soluble magnesium oxide.....	3.91 3.04	2.90 2.62
International Tobacco 6-3-6, 2% magnesium oxide.	3.98 3.55	3.04 2.72
International 6-12-12, 2% water soluble magnesium oxide	2.25	2.18
International 7-7-7, 1% magnesium oxide.....	1.30 1.30	.68 .77
International 8-6-2, 1% water soluble magnesium oxide	2.82	1.81
International 10-10-10, 1% magnesium oxide.....	1.59 1.02	.95 .23
Old Deerfield Fertilizer Co., Inc.		
Old Deerfield 5-8-7, 2% magnesium oxide....	4.25	3.26
Old Deerfield 5-10-10, 2% magnesium oxide, potash other than muriate	2.61	1.00

NITROGEN COMPOUNDS

Manufacturer and Brand	Nitrogen	
	Found	Guaranteed
American Agricultural Chemical Co.		
Agrinite.....	{ 8.42 8.53	8.25 8.25
Castor Pomace.....	5.28	4.50
American Cyanamid Co.		
Aero Cyanamid Granular 20%.....	{ 19.79 20.03 20.13	20.00 20.00 20.00
Aero Cyanamid Special Grade 21%.....	21.44	21.00
Aeropills Ammonium Nitrate.....	{ 33.58 33.89	33.50 33.50
H. J. Baker & Bro.		
Montansalpeter Ammonium Sulphate Nitrate..	26.18	26.00
Chilean Nitrate Sales Corp.		
Chilean Nitrate of Soda—Champion Brand..	{ 16.00 16.02 16.11	16.00 16.00 16.00
Consolidated Rendering Co.		
Corenco Organic Tankage.....	8.31	8.25
E. I. du Pont de Nemours & Co.		
Du Pont Nu Green Fertilizer Compound.....	{ 45.27 45.22	45.00 45.00
Fox Point Chemical Co.		
Old Fox Brand Organo.....	5.67	5.00
Humphreys-Godwin Co.		
Dixie Brand 41% Cottonseed Meal.....	6.56	6.56
Spencer Kellogg & Sons, Inc.		
Castor Pomace.....	5.84	5.55
Nitrogen Division, Allied Chemical & Dye Corp.		
A-N-L Fertilizer Compound.....	20.68	20.50
Old Deerfield Fertilizer Co., Inc.		
Sulphate of Ammonia.....	20.60	20.50
Rogers & Hubbard Co.		
Hubbard Castor Pomace.....	6.01	4.50
Sears, Roebuck & Co.		
Cross Country Sulphate of Ammonia.....	21.06	20.00
Viscoid Products Co.		
Bare Spot R.....	4.63 ^a	3.90

^a Water insoluble organic nitrogen found, 4.48%.

PRODUCTS SUPPLYING ORGANIC NITROGEN AND

Phosphoric Acid

Manufacturer and Brand	Total Nitrogen Found	Total Phosphoric Acid		Available Phosphoric Acid	
		Found	Guaranteed	Found	Guaranteed
American Agricultural Chemical Co. Bone Meal 1.50-25.	2.40	27.30	25.00	—	—
Apothecaries Hall Co. Dry Ground Fish 9-5.	10.41	7.55	5.00	—	—
Armour Fertilizer Works All Organic 5-5.	5.08	6.20	—	5.54	5.00
Bone Meal 2.30-23.	2.79	25.20	23.00	—	—
H. J. Baker & Bro. Nitrogranic (All-Organic) 5-4.	5.00	4.90	—	4.44	4.00
Consolidated Rendering Co. Corenco Organic Turf Fertilizer 5-6.	5.11	6.60	—	6.00	6.00
Corenco Ground Bone 2-22.	3.01	25.50	22.00	—	—
Faesly & Besthoff, Inc. F & B Pure Bone Meal 2.47-23.	2.23	28.60	23.00	—	—
Fox Point Chemical Co. Old Fox Brand Bone Meal 1.5-23.	2.72	25.80	23.00	—	—
Goulard & Oleno, Inc. G & O Ground Bone 2.40-20.	2.52	26.30	20.00	—	—
A. H. Hoffman, Inc. Bone Meal 3.70-20.	4.03	20.00	20.00	—	—
International Minerals & Chemical Corp. Bone Meal 2.47-23.	2.59	25.40	23.00	—	—
Lebanon Chemical Corp. Farmrite Bone Meal 2.30-20.	2.45	27.40	20.00	—	—
Old Deerfield Fertilizer Co., Inc. Dry Ground Fish 9-5.	9.85	5.70	5.00	—	—
Olds & Whipple, Inc. O & W Menhaden Dry Ground Fish 9-5.	10.11	5.6	5.00	—	—
Reddi-Mix Products Co. Bone Meal 2.47-23.	2.57	26.00	23.00	—	—
Rogers & Hubbard Co. Gro-Fast All Organic 5-4.	4.88	4.52	—	4.00	4.00
Gro-Fast Bone Meal 2-23.	2.57	28.30	23.00	—	—
Sears, Roebuck & Co. Cross Country Lawn Food 5-4.	5.00	4.80	—	4.14	4.00
Cross Country Bone Meal 2-6.	2.68	27.70	26.00	—	—
Sewerage Commission of the City of Milwaukee Milorganite 6-2.	6.00	—	—	2.95	2.00
Swift & Co. Plant Food Division All Organic Lawn Food 5-3.	5.14	—	—	4.00	3.00

Brands Seriously Deficient

Lebanon Chemical Corp. Lebanon Turf-Organic 5-3 (a).	4.41	3.10	—	2.68	3.00
Sewerage Commission of the City of Milwaukee Milorganite 6.4 (b).	5.58	4.90	—	4.28	4.00

a Approximate commercial shortage per ton, \$10.42.

b Approximate commercial shortage per ton, \$5.97.

PHOSPHORIC ACID COMPOUNDS

Manufacturer and Brand	Total Phosphoric Acid	Available Phosphoric Acid	
		Found	Guaranteed
American Agricultural Chemical Co. AA Quality Phosphate Rock...	30.80a 31.00a	— —	— —
18% Normal Superphosphate	—	18.20 18.35	18.0 18.0
Consolidated Rendering Co. Corenco Superphosphate 20%	— —	20.90 20.00 20.10	20.0 20.0 20.0
Davison Chemical Corp. Davco Granulated Superphosphate 20%	—	20.20	20.0
Eastern States Farmers' Exchange, Inc. Superphosphate 20%	—	20.60	20.0
Farm Bureau Association Superphosphate 20%	—	20.50	20.0
International Minerals & Chemical Corp. Superphosphate 20%	—	20.95	20.0
Old Deerfield Fertilizer Co., Inc. Superphosphate 20%	21.35	21.17	20.0
Rogers & Hubbard Co. Hubbard Superphosphate 20%	—	20.65	20.0

Brand Seriously Deficient

Armour Fertilizer Works Big Crop Superphosphate 20% (b)	21.25	19.13	20.00
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a Guaranteed 30% total phosphoric acid.

b Approximate commercial shortage per ton. \$1.83.

POTASH COMPOUNDS

Manufacturer and Brand	Water Soluble Potash	
	Found	Guaranteed
Eastern States Farmers' Exchange, Inc. Muriate of Potash	60.00	60.00
Fox Point Chemical Co. Old Fox Muriate of Potash	59.50	60.00
International Minerals & Chemical Corp. Muriate of Potash Sul Po Mag (d)	60.00 21.60	60.00 21.00
Old Deerfield Fertilizer Co., Inc. Muriate of Potash	60.00	60.00
Rogers & Hubbard Co. Hubbard Muriate of Potash	60.56	60.00

Brand Seriously Deficient

Consolidated Rendering Co. Muriate of Potash (b)	58.7	60.00
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a Magnesium oxide found, 19.60%; guaranteed 18%.

b Approximate commercial shortage per ton. \$1.28.

DRIED ANIMAL MANURES

From time to time, efforts have been made to improve the quality of the dried animal manures being sold in this State.

During the past year each sample analyzed also was examined microscopically. Chemical analysis revealed in some samples serious deficiencies in the content of nitrogen, phosphoric acid, and or potash. Microscopic examination showed that some lots were grossly mislabeled. The contents of the bags in these lots sometimes bore only a faint resemblance to the product named on the label.

In the table of brands seriously deficient there are listed six lots that were so bad they were withdrawn from sale either voluntarily by the registrant or at the request of the Control Service.

When notified of the high sand content and improper labeling of his product, one manufacturer replied ". . . it is the writer's opinion, after forty years of experience in this exclusive field, **that no one or no manufacturer has ever packed or sold a 100 % sheep manure.** For proof of that, the most popular brand on the market up to a few years ago labeled as Sheep Manure contained over 95 % of straw and foreign matter including dirt. . . . the public very apparently does not care whether the product contains 1 % of Sheep Manure or **no Sheep Manure** just so long as it is labeled Sheep Manure."

From this it might be inferred that at least some dried animal manure suppliers feel there is no fraud involved because those familiar with the processing and packaging of animal manures allegedly know that most products labeled Sheep Manure, Cow Manure, etc., contain very high amounts of sand, or straw and similar materials, or both.

In a decision involving a Federal Trade Commission order the Supreme Court ruled otherwise, stating:

"The fact that a false statement may be obviously false to those who are trained and experienced does not change its character, nor take away its power to deceive others less experienced. There is no duty resting upon a citizen to suspect the honesty of those with whom he transacts business. Laws are made to protect the trusting as well as the suspicious. The best element of business has long since decided that honesty should govern competitive enterprises and that the rule of *caveat emptor* (buyer beware) should not be relied upon to reward fraud and deception."

The Massachusetts Fertilizer Control Service will continue its efforts to provide gardeners with dried animal manures of better quality.

Pulverized Animal Manures

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Acid Insoluble Ash (Sand)
American Agricultural Chemical Co.				
Sheep Manure (1.25-1-2) <i>a</i>	1.25	.65	2.97	34.1
Armour Fertilizer Works				
Pulverized Sheep Manure (1.25-1-2).....	{1.34 1.62 1.61 1.55	1.10 1.00 1.50 1.65	4.60 5.25 4.54 5.26	31.6 28.7 25.4 22.2
Atkins & Durbrow, Inc.				
A & D Driconure (1-1-1).....	{2.21 2.18	3.95 1.35	1.17 1.14	8.8 41.8
Chicago Stock Yards Compost Co.				
Fertilife Organic Compost (1.75-1.5-1.25).....	2.33	1.70	2.50	11.7
Coastal Dry-Manure Corp.				
Dry-Manure (1-1-1).....	1.48	1.55	1.29	31.0
Consolidated Rendering Co.				
Corenco Dried Cow Manure (2-1-1) <i>a</i>	{2.37 1.77 3.45	1.20 .85 1.30	2.40 1.87 1.42	7.2 30.7 27.3
Corenco Sheep Manure (2-1-2) <i>a</i>	{2.00 2.00 2.04	1.35 1.65 1.75	3.05 2.76 3.95	21.7 24.7 11.6
E. J. Cote				
Meadow Brand Sheep Manure (1.5-0.4-2.5).....	{1.44 1.39	.25 .45	3.33 3.49	48.7 47.6
Goulard & Oleno, Inc.				
G & O Sheep and Guano Manure (1.5-1-1).....	1.67	1.45	1.20	52.2
A. H. Hoffman, Inc.				
Cow Manure (Dehydrated) (2-1-1).....	{2.00 1.85	1.00 1.45	2.25 2.16	1.9 2.4
Sheep Manure (Kiln-Dried) (1.5-1-2) <i>a</i>	{2.13 1.80 1.95	1.00 1.10 1.50	2.70 2.64 2.93	19.5 26.8 23.2
International Minerals & Chemical Corp.				
Sheep Manure (1.25-1-2).....	{1.60 1.59	1.20 1.20	4.99 3.42	23.3 24.9
Lebanon Chemical Co.				
Farmrite Cow Manure (2-1-1).....	{2.00 2.00	.85 1.04	2.75 2.40	14.7 21.0
Farmrite Sheep Manure (2-1-1) <i>a</i>	2.09	1.00	2.22	25.3
Natural Plant Food Co.				
Longhorn Brand Cattle Manure (2-1-2).....	{1.80 1.80	1.12 1.06	2.35 2.52	23.5 29.2
Ramshorn Sheep Manure (2-1-2).....	{2.00 2.00 2.26	1.00 1.10 1.15	3.35 2.57 3.08	15.5 23.1 20.1
Premier Peat Moss Corp.				
Premier-Nure (2-1-1) <i>a</i>	3.52	2.90	2.55	4.7
Rogers & Hubbard Co.				
Gro-Fast Sheep Manure (1.25-1-2).....	{1.85 1.23 1.25	.85 .75 .60	3.35 3.00 3.51	37.3 31.7 33.4

a See also "Brands Seriously Deficient," p. 22.

Pulverized Animal Manures—(Concluded)

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Acid Insoluble Ash (Sand)
Sears, Roebuck & Co.				
Cross Country Cattle Manure (1.5-1-2)	2.08	.80	2.60	18.9
	2.22	.90	2.67	26.5
Cross Country Sheep Manure (1.5-1-2)	2.21	1.00	3.00	20.0
	2.00	1.30	3.53	18.4
Wendell S. Still				
Farmanure (2-1-1)	2.98	1.65	2.60	6.4
Triple A Mills				
Sure-Gro Fertilizer Lawns Gardens & Shrubs				
(Poultry Manure) (3.25-2.5-1.5) ^a	2.87	3.70	2.07	6.1
Walker-Cordon Laboratory Co.				
Bovum (2-1-1)	2.02	1.60	2.49	2.9
	2.07	1.40	2.43	3.1
	2.00	1.35	2.31	5.9

^a See also "Brands Seriously Deficient," p. 23.

PULVERIZED ANIMAL MANURES **Brands Seriously Deficient**

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Acid Insoluble Ash (Sand)	
American Agricultural Chemical Co. Sheep Manure (1.25-1-2) <i>a</i>	1.08	.50	2.63	36.7	Deficient in phosphoric acid
Consolidated Rendering Co. Corenco Dried Cow Manure (2-1-1) <i>a</i>	2.19	1.45	.86	1.5	Mixture of peanut shells and an unidentified by-product which is not cow manure. Withdrawn from sale.
Corenco Sheep Manure (2-1-2) <i>a</i>	1.63	1.00	2.00	32.2	Deficient in nitrogen.
A. H. Hoffman, Inc. Sheep Manure (Kiln-Dried) (1.5-1-2) <i>a</i>	1.14	.85	2.19	54.1	Deficient in nitrogen and phosphoric acid. Contains large amounts of shavings, dirt and some limestone.
Lebanon Chemical Co. Farmrite Sheep Manure (2-1-1) <i>a</i>	1.30	1.05	2.28	39.7	Deficient in nitrogen.
Premier Peat Moss Corp. Premier-Nure (2-1-1) <i>a</i>	.57	1.00	.35	1.9	Deficient in nitrogen and potash. Mostly sawdust with only a trace of poultry manure. Withdrawn from sale.
Premier-Nure (2-1-1)	1.11	1.00	.60	8.1	Deficient in nitrogen and potash. Mostly sawdust with only a trace of poultry manure. Withdrawn from sale.
Premier-Nure (2-1-1)	.61	.45	.34	4.4	Deficient in nitrogen, phosphoric acid and potash. Mostly sawdust with only a trace of poultry manure. Withdrawn from sale.
Premier-Nure (2-1-1)	.76	.50	.38	5.6	Deficient in nitrogen, phosphoric acid and potash. Mostly sawdust with only a trace of poultry manure. Withdrawn from sale.

PULVERIZED ANIMAL MANURES—Concluded

Brands Seriously Deficient

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Acid Insoluble Ash (Sand)	
Rogers & Hubbard Co. Gro-Fast Cow Manure (2-1-1)	99	80	1 00	56 8	Deficient in nitrogen and phosphoric acid. Mostly ground cow bedding consisting of peanut shells, straw, sand and very little manure. Withdrawn from sale.
Thomson Nursery Cow Manure	71	10	27	33 1	Brand unregistered when sampled. No guarantee on label. This is a very low grade of cow manure. Contains a great deal of shavings.
Triple A Mills Sure-Gro Fertilizer Lawns Garden & Shrub-Poultry Manure (3.25-2.5-1.5) ^a	2 49	2 95	1 73	8 9	Deficient in nitrogen.

^a See also preceding table, page 21.

AGRICULTURAL LIME PRODUCTS

Manufacturer and Brand	Calcium Oxide (CaO)		Magnesium Oxide (MgO)		Neutralizing Value Expressed in Terms of Calcium Oxide	Insoluble Matter	Mechanical Analysis Per Cent	
	Found	Guaranteed	Found	Guaranteed	Pounds in One Ton	Per Cent	Finer than 100-mesh	Coarser than 20-mesh
Conklin Limestone Co., Inc., Canaan, Conn. High Magnesium Agricultural Limestone	27.8	30.0	18.1	18.0	51.5	1.030	67.52	none
	65.9	60.0	2.1	1.0	65.9	1.318	—	—
A. H. Hoffman, Inc. Hoffman Hydrated Lime	47.2	45.0	33.2	30.0	91.6	1.832	1.0	—
	47.2	45.0	33.2	30.0	91.2	1.824	7	—
Lee Lime Corp. Lee Double Strength Agricultural Hydrated Lime	44.7	45.0	31.1	30.0	85.7	1.714	1.1	—
	44.6	38.0	8.8	8.0	52.2	1.044	8.4	—
Lee Hydrated Lime—General Purpose Lee Lawn and Garden Limestone	43.5	38.0	8.1	8.0	53.2	1.064	6.6	—
	30.2	30.0	20.9	20.0	56.9	1.138	2.9	—
Lee Pulverized Limestone	30.5	30.0	21.6	20.0	58.9	1.178	1.1	—
	30.2	30.0	21.4	20.0	58.7	1.174	1.7	—
Lee Spray Lime	44.7	45.0	33.2	30.0	88.7	1.774	.3	—
	43.8	45.0	31.8	30.0	85.7	1.714	.5	—
Tobey Aqua Hydrate	39.4	35.0	26.9	25.0	75.0	1.500	1.1	—
	37.9	35.0	27.3	25.0	74.0	1.480	.7	—
Tobey Pulverized Limestone Dust	39.4	35.0	27.3	25.0	75.7	1.514	.9	—
	39.4	35.0	27.6	25.0	76.6	1.532	1.5	—
H. F. Millard Lime & Stone Co. Sweet Arrow Hydrated Lime	41.1	38.0	9.3	8.0	52.4	1.048	7.9	—
	70.3	70.0	1.1	1.0	70.4	1.408	5.4	—
New England Lime Co. Nelco Agricultural Hydrated Lime (Adams)	74.3	70.0	7	5	73.6	1.472	9	—
	46.2	47.0	32.4	31.0	89.6	1.792	.8	—
United States Gypsum Co. Red Top General Purpose Hydrated Lime	30.8	30.0	22.1	21.0	60.0	1.200	1.8	—
	41.8	35.0	28.7	25.0	80.0	1.600	.9	—
United States Gypsum Co. Red Top General Purpose Hydrated Lime	70.3	70.0	3.1	trace	71.7	1.434	6	—
	70.8	70.0	2.8	trace	72.4	1.448	.8	—

DIRECTORY OF MANUFACTURERS WHO REGISTERED FERTILIZERS FOR SALE IN MASSACHUSETTS IN 1951

- Agricultural Products Co., West Kingston, R. I.
 Amalia Tree Surgeons, Inc., 5 Elm St., Manchester, Mass.
 American Agricultural Chemical Co., 285 River St., North Weymouth, Mass.
 American Chemical Paint Co., Ambler, Penn.
 American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.
 American Liquid Fertilizer Co., Inc., 2nd St., at St. Clair, Marietta, Ohio
 Apothecaries Hall Co., 28 Benedict St., Waterbury, Conn.
 Archer-Daniels-Midland Co., 600 Roanoke Bldg., Minneapolis 2, Minn.
 Armour Fertilizer Works, Carteret, N. J.
 Ashcraft-Wilkinson Co., 601 Trust Co. of Georgia Bldg., Atlanta 3, Ga.
 Associated Seed Growers, Inc., Milford, Conn.
 Atkins & Durbrow, Inc., 165 John St., New York 38, N. Y.

 H. J. Baker & Bro., 600 Fifth Ave., New York 20, N. Y.
 F. A. Bartlett Tree Expert Co., 60 Canal St., Stamford, Conn.
 Joseph Breck & Sons Corp., 401 Summer St., Boston 10, Mass.
 Buell Fertilizer Co., Exeter, N. H.

 California Spray-Chemical Corp., Lucas and Ortho Way, Richmond, Cal.
 Carac Floral Co., Inc., 2875 Milburn Ave., Baldwin, N. Y.
 Carbola Chemical Co., Inc., Natural Bridge, N. Y.
 J. J. Chesnicka Landscape Service, 47 Broad St., Westfield, Mass.
 Chicago Stock Yards Compost Co., 503 Exchange Bldg., Chicago 9, Ill.
 Chilean Nitrate Sales Corp., 120 Broadway, New York 5, N. Y.
 Clinton Nurseries, Clinton, Conn.
 Consolidated Rendering Co., 178 Atlantic Ave., Boston 10, Mass.

 Davey Tree Expert Co., 117 South Water St., Kent, Ohio
 Dayson Chemical Co., Division of W. R. Grace & Co., Baltimore 3, Md.
 Doggett-Pfeil Co., 681 Morris Turnpike, Springfield, N. J.

 E. I. du Pont de Nemours & Co., Wilmington, Del.
 Eastern States Farmers' Exchange, Inc., 26 Central St., West Springfield, Mass.
 Essex County Cooperative Farming Association, 144 South Main St., Topsfield, Mass.
 Excell Laboratories, Inc., 2732 Indiana Ave., Chicago, Ill.

 Faesv & Besthoff, Inc., 325 Spring St., New York 13, N. Y.
 Farm Bureau Association, 155 Lexington St., Waltham, Mass.
 Ford Motor Co., 300 Schaefer Road, Dearborn, Mich.
 Fox Point Chemical Co., 46 Valley St., East Providence, R. I.
 Frank's Market Garden, 1398 Allen St., Springfield, Mass.

 Garden Research Laboratories, 699 Madison Ave., New York 21, N. Y.
 Goulard & Olena, Inc., Skillman, N. J.

 C. L. Halvorson Tree Service, 150 North St., Pittsfield, Mass.
 Heller Greenhouse Laboratories, 218 E. Pikes Peak Ave., Colorado Springs, Col.
 A. H. Hoffman, Inc., Landisville, Penn.
 Hoover Soil Service, Gilman, Ill.
 Humphreys-Godwin Co., 2246 Park Ave., Memphis, Tenn.
 Hydroponic Chemical Co., Inc., Copley, Ohio
 Hy-Trous Corp., 50 Cross St., Winchester, Mass.

 International Minerals & Chemical Corp., Woburn, Mass.

 Kahn Bros. Co., 4425 South Halsted St., Chicago 9, Ill.
 Spencer Kellogg & Sons, Inc., 98 Delaware Ave., Buffalo 2, N. Y.

 Lebanon Chemical Corp., Lebanon, Penn.
 Loanium Company of America, 2 Kingsland Ave., Harrison, N. J.
 L. B. Lovitt & Co., 314 Cotton Exchange Bldg., Memphis, Tenn.
 John D. Lyon, Inc., 143 Alewife Brook Pkwy., Cambridge 40, Mass.

McCormick & Co., Inc., McCormick Bldg., Baltimore 2, Md.

Mamlon Co., 1089 Wialley Ave., New Haven 15, Conn.

Monsanto Chemical Co., 1700 South Second St., St. Louis 4, Mo.

Natural Plant Food Co., 210 West California St., Oklahoma City 2, Okla.

Nitrogen Division, Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

Old Deerfield Fertilizer Co., Inc., South Deerfield, Mass.

Olds & Whipple, Inc., 168 State St., Hartford, Conn.

Oswego Soy Products Corp., East Seneca St., Oswego, N. Y.

Pedigreed Seed Co., 96 Forest St., Jersey City 5, N. J.

Charles C. Penn Co., 39 Deering Road, Dorchester, Mass.

Plant Magic Products, Inc., 40 Highland Ave., Seekonk, Mass.

Plantabbs Corp., 1105 Maryland Ave., Baltimore 1, Md.

Premier Peat Moss Corp., 535 Fifth Ave., New York 17, N. Y.

Proen Products Co., 9th & Grayson Sts., Berkeley 10, Cal.

Ra-Pid-Gro Corp., 83 Ossian St., Dansville, N. Y.

John Reardon & Sons Div. of Wilson & Co., Inc., Cambridge 39, Mass.

Reddi-Mix Products Co., 543 Ferry St., Everett, Mass.

Rogers & Hubbard Co., Portland, Conn.

Rose Manufacturing Co., 445 Main St., Beacon, N. Y.

Ruhm Phosphate & Chemical Co., P. O. Box 361, Columbia, Tenn.

St. Louis National Stockyards Co., Exchange Bldg., National Stock Yards, Ill.

O. M. Scott & Sons Co., Marysville, Ohio

Sears, Roebuck & Co. 925, South Homan Ave., Chicago 7, Ill.

Sewerage Commission of the City of Milwaukee, Milwaukee 1, Wis.

Smith Agricultural Chemical Co., 618 North Champion St., Columbus 16, Ohio

Soil-Tone Corp., P. O. Box 218, Plymouth, N. C.

Stern's Garden Products, Inc., 404 William St., Geneva, N. Y.

Wendell S. Still, Middle Country Road, Selden, N. Y.

Stimuplant Laboratories Co., 791 S. Lazelle St., Columbus 16, Ohio

Stockdale Fertilizer Co., Morris, Ill.

Swift & Co. Plant Food Division, 25 Faneuil Hall Square, Boston 9, Mass.

Tennessee Corp., 617-27 Grant Bldg., Atlanta, Ga.

Thomson Phosphate Department, International Minerals & Chemical Corp., 20 North Wacker Drive, Chicago 6, Ill.

Triple A Mills, 14 Ellis Drive, Worcester, Mass.

Universal Chemical Co., 52 Oakville St., Lynn, Mass.

U. S. Chemical Products Corp., P. O. Box 212, Columbus 9, Ohio

Valley Feed & Supply Co., Inc., Union Road, Spring Valley, N. Y.

Veritas Co., Inc., Broad St., Medway, Mass.

Victor Chemical Works, 141 West Jackson Blvd., Chicago 4, Ill.

Viscoid Products Co. (Subsidiary of Druid Hill Park Seed Corp.), 519-527 West Pratt St., Baltimore 1, Md.

Walker-Gordon Laboratory Co., Plainsboro, N. J.

F. H. Woodruff & Sons, Inc., Milford, Conn.

Woodruff Fertilizer Works, Inc., North Haven, Conn.

**DIRECTORY OF MANUFACTURERS WHO REGISTERED
AGRICULTURAL LIME PRODUCTS FOR SALE
IN MASSACHUSETTS IN 1954**

- Adams Hydrate Co., Inc., 177 Milk St., Boston, Mass.
Conklin Limestone Co., Inc., Canaan, Conn.
Conklin Limestone Co., Inc., R.F.D., Saylesville, R. I.
A. H. Hoffman, Inc., Landisville, Penn.
Kelley Island Lime and Transport Co., 1132 Leader Bldg., Cleveland 14, Ohio
Lee Lime Corp., Lee, Mass.
Limestone Products Corp. of America, 122 Main St., Newton, N. J.
H. E. Millard Lime & Stone Co., Annville, Penn.
New England Lime Co., Adams, Mass.
Reddi-Mix Products Co., 543 Ferry St., Everett, Mass.
United States Gypsum Co., 300 West Adams St., Chicago 6, Ill. •

Seed Inspection

BY

Seed Control Service Staff



Mass. Agricultural Experiment Station
July 26, 1955

This report, the twenty-seventh in seed control service, is a record of work delegated to the Massachusetts Agricultural Experiment Station during 1954 by authority of Chapter 94 as amended by Chapter 377 of the Acts of 1946.

LABORATORY REGULATIONS AND FEES FOR TESTING SEED

The following regulations and fees have been approved by the Director of the Massachusetts Agricultural Experiment Station.

FIELD CROPS:	KIND OF SEED	PURITY	GERMINATION	PURITY AND
		ONLY	ONLY	GERMINATION
	Alfalfa, Rape, Ryegrasses, Soybeans, Timothy...	\$1.00	\$0.50	\$1.25
	Cereals, Buckwheat, Sudan Grass, Vetches.....	1.25	.50	1.50
	Clovers, Fescues, Reed Canary Grass.....	1.00	.50	1.50
	Brome Grass, Millets.....	1.50	.50	2.00
	Bentgrasses, Bluegrasses, Orchard Grass, Redtop...	2.00	.50	2.25
	Redtop (Unhulled).....	2.50	.50	2.75

Mixtures: Lawn, Pasture, Mowing, etc.

Purity only.....\$2.50

Germination only..... .50 for each component

Purity and Germination..... 2.50 + .50 for each component

Special Mixtures: Consisting of two kinds of cereals, two kinds of clover only, or Timothy and one kind of clover

Purity only..... \$1.25

Germination only..... .50 for each component

Purity and Germination..... 2.00

Vegetables: Germination tests for all kinds of vegetable seeds, 30 cents each.

Cleaning Tobacco Seed: For each lot of one pound or less, based on the weight of seed as received for cleaning, 50 cents.

Kinds of Seed Not Listed: Fees for testing and for other seed determinations not listed will be based on the time consumed in making the test or for other service requested.

Free Tests: During any one calendar year, the Seed Testing Laboratory will allow two free tests of vegetable or tobacco seed to any person residing or doing business in the Commonwealth.

The minimum weights of samples to be submitted for analysis are:

- Two ounces of grass seed, white or alsike clover, or seeds not larger than these.
- Five ounces of red or crimson clover, alfalfa, ryegrasses, millet, rape, or seeds of similar size.
- One pound of cereal, vetches, or seeds of similar or larger size.

The minimum number of seeds of any kind to be submitted for a germination test is 400.

Samples should be taken so as to represent correctly the lot sampled, each placed in a strong container, the parcel of samples securely wrapped and addressed to Seed Laboratory, Agricultural Experiment Station, Amherst, Mass.

Checks or Money Orders must be made payable to the University of Massachusetts and sent to the Seed Laboratory.

In no case will the final report for work done be rendered until all fees are paid.

SEED INSPECTION FOR THE SEASON OF 1954

By Seed Control Service Staff

John W. Kuzmeski, *Research Professor*
in Charge of Seed Laboratory

Jessie L. Anderson, *Assistant Professor*
Waldo C. Lincoln, Jr., *Instructor*
A. W. Clapp, *State Inspector*¹

Mrs. Phyllis Russell, *Laboratory Assistant*
Paul Korpita, *Laboratory Assistant*
Leon Stowell, *Laboratory Helper*

May J. Honnay, *Clerk*

Massachusetts Vegetable Seed Standards for 1955

The amended seed law requires in Section 261 I that the Director of the Massachusetts Agricultural Experiment Station shall, after reasonable notice and hearing and with the approval of the Commissioner of Agriculture, adopt vegetable seed germination standards, prescribe rules and regulations, and in like manner modify or amend rules and regulations governing the methods of sampling, inspecting, analyzing, testing, and examining agricultural, vegetable and flower seeds and the tolerances to be followed in administration.

A hearing for the above stated purpose was held in Horticultural Hall, Worcester, Massachusetts, at 3 P. M., October 18, 1946. The following set of standards was so approved and adopted:

KIND OF SEED	GERMINATION STANDARD %	KIND OF SEED	GERMINATION STANDARD %
Artichoke (<i>Cynara Scolymus</i>)....	60	Kale.....	75
Asparagus.....	70*	Kohlrabi.....	75
Bean, Lima.....	70	Leek.....	60
Bean, Scarlet Runner.....	75	Lettuce.....	80
Bean, Other Varieties.....	75	Muskmelon.....	75
Beet.....	65	Mustard.....	75
Broccoli.....	75	Okra.....	50*
Brussels Sprouts.....	70	Onion.....	70
Cabbage.....	75	Parsley.....	60
Cabbage, Chinese.....	75	Parsnip.....	60
Carrot.....	55	Peas.....	80
Cauliflower.....	75	Pepper.....	55
Celeriac.....	55	Pumpkin.....	75
Celery.....	55	Radish.....	75
Chard, Swiss.....	65	Rhubarb.....	60
Chicory.....	65	Rutabaga.....	75
Citron.....	65	Salsify.....	75
Collard.....	80	Sorrel.....	60
Corn, Sweet.....	75	Soybean.....	75
Cress, Garden or Curled.....	40	Spinach, Common.....	60
Cress, Water.....	35	Spinach, New Zealand.....	40
Cucumber.....	80	Squash.....	75
Dandelion.....	45	Tomato.....	75
Egg Plant.....	60	Tomato, Husk.....	50
Endive.....	70	Turnip.....	80
Fetticus (Corn Salad).....	70	Watermelon.....	70

*Including Hard Seeds. However, the percentage of germination, exclusive of hard seeds and the percentage of hard seed, if present, must be stated.

¹Employed by the State Department of Agriculture.

1954 OFFICIAL INSPECTION OF AGRICULTURAL SEEDS

From November 1, 1953, to December 31, 1954, the Seed Laboratory received 6452 samples of seed, of which 1322 were collected by the State Department of Agriculture and 5130 were sent in by seedsmen, farmers, and various State institutions.

Classification of the samples for which tests were completed, with the total number of laboratory tests involved, is listed in the following summary. It will be noted that the total number of tests required for the 6452 samples was 247 for purity and 6723 for germination.

NUMBER OF SAMPLES	NUMBER OF TESTS	
	PURITY	GERMINATION
177 Field Crops for Purity and Germination.....	177	177
766 Field Crops for Germination Only.....	-----	766
2 Field Crops for Purity Only.....	2	-----
52 Lawn Mixtures and Other Types of Mixtures, for Purity; Germinations involving 234 ingredients	52	234
33 Lawn Mixtures for Germination Only; Germinations involving 140 ingredients.....	-----	140
16 Lawn Mixtures for Purity Only.....	16	-----
4828 Vegetables for Germination Only.....	-----	4828
9 Tree Seeds for Germination Only.....	-----	9
134 Tobacco Seeds for Germination Only.....	-----	134
435 Flower Seeds for Germination Only.....	-----	435
<hr/> 6452	<hr/> 247	<hr/> 6723

Field tests to determine trueness to type consisted of 176 samples of vegetable seeds and 422 samples of flower seeds, respectively.

The Seed Laboratory cleaned 91 lots of tobacco seed for Connecticut Valley farmers. The gross weight of the tobacco seeds was 102.6 pounds, and the net weight for the cleaned seed was 79.4 pounds.

Explanation of Tables

Tables 1 through 5 consist of data in conformity with requirements of the Seed Law defined by Chapter 94 as amended by Chapter 377 of the Acts of 1946:

- Table 1. Results of Inspection and Analyses of Field Seeds as defined under Sections 261 B1 and 261 C.
- Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds as defined under Sections 261 B1 and 261 C.
- Table 3. Results of Inspection and Germination of Vegetable Seeds as defined under Sections 261 B2 and 261 C.
- Table 4. Field Tests of Vegetable Seeds, Type and Variety Studies, as defined under Sections 261 H.
- Table 5. Studies of Flower Seeds, Laboratory and Field Tests to Determine Quality, as defined under Sections 261 H.
- Table 6. Summary, by Wholesalers, of the Performance of Flower Seeds in the Field.
- Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory. This table lists the number of samples correctly labeled or mislabeled.

All samples were taken by an inspector from the State Department of Agriculture and were tested at the Seed Laboratory according to the Rules for Seed Testing adopted by the Association of Official Seed Analysts.

Within each table the wholesalers are listed in alphabetical order, and the various kinds of seeds sold by them follow the same alphabetical arrangement. Mislabeling and other irregularities are emphasized by boldface type and explained in the final column of the table. The number preceding each analysis is for identification and reference. The line to the right of the letter "L" gives information copied from the label; that to the right of "F," what was found in the laboratory analysis.

Results of Inspection and Analyses of Field Seeds—Sections 261 B1 and 261 C.

Each lot of Agricultural Seeds except Barley, Buckwheat, Oats, Rye, and Wheat must be labeled to show the commonly accepted name and variety. When the variety is unknown, the label shall bear the statement: "Variety Unknown." The label must also show lot number or other identification; percentage, by weight, of pure seed; percentage, by weight, of inert matter; percentage, by weight, of weed seeds; percentage, by weight, of other agricultural seeds; percentage of (a) germination, exclusive of hard seeds; (b) hard seeds, if present; month and year germination test was completed; origin of Alfalfa, Red Clover, and Field Corn (other than Hybrid) if origin is unknown, it must be so stated; name and address of the person who labeled the seed, or who sells, offers, or exposes such seed for sale; and the names of secondary noxious weed seeds and number per ounce when present singly or collectively in excess of 1 in 5 grams and 1 in 10 grams of the smaller seeds, and per pound when present in excess of 1 in 25 grams and 1 in 100 grams of the larger seeds. Secondary noxious weeds are dodder (*Cuscuta* spp.), horse nettle (*Solanum carolinense*), wild mustards (*Brassica* spp.), wild garlic and wild onion (*Allium* spp.), perennial sow thistle (*Sonchus arvensis*), corncockle (*Agrostemma Githago*), buckhorn plantain (*Plantago lanceolata*), and wild radish (*Raphanus Raphanistrum*). Seed is prohibited from sale for having a false or misleading label; unless the test for germination has been completed within a nine-month period or if it contains primary noxious weed seeds in excess of tolerance. Primary noxious weeds are Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), and quack grass (*Agropyron repens*).

One hundred thirty samples of field crop seeds were analyzed in the laboratory. Results of analysis, however, are given only for samples that were mislabeled. In Table 1, complete analysis is recorded; but mislabeling, indicated by boldface type, is applied only to the items named above. Wholesaler's name is in boldface type.

Table 1

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed, Origin and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
S-287	Kentucky Bluegrass	Associated Seed Growers, Inc., Cambridge, N. Y.							
		Danvers State Hospital, Hattierne	L 88.20 F 86.78	0.36 0.24	11.44 12.74	0.00 0.24	75.00 86.00	11 1953 3 1954	*Required information not given.
S-278	Kentucky Bluegrass	Worcester State Hospital, Worcester							
		Lot No. (*)	L 88.20 F 86.04	0.36 0.29	11.44 13.67	0.00 0.00	75.00 85.00	11/1953 3/1954	*Required information not given.

Table 1. Results of Inspection and Analyses of Field Seeds—Continued.

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed, Origin and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
Bell Seed Co., Baltimore, Md.									
S-937	Reed Canary Grass	Danvers State Hospital, Hathorne No. 2139.....	L 98.78 F 98.65	0.10 0.24	0.97 0.97	0.15 0.14	95.00 86.00	2/1954 5/1954	Germination below that stated.
S-940	Alfalfa	State Farm, So. Bridgewater No. 406..... (Origin—Utah)	L 99.66 F 99.78	0.08 0.14	0.30 0.08	0.06 0.00	90.8 75.21	2/1954 5/1954	Germination below that stated.
1047	Wheat	Arthur R. Cone, Inc., Buffalo, N. Y. Beacon Grain Store, Fall River **Spring, No. 54-444.....	L 99.91 F 99.93	0.09 0.00	0.00 0.03	0.00 0.04	95.00 97.00	12/1953 6/1954	**Variety required unless there is a statement "Variety Unknown." "Spring" not a variety.
S-939	Scott Clover	Danvers State Hospital, Hathorne No. 15 x 11, (Red Clover).....	L 99.44 F 99.70	0.14 0.00	0.40 0.24	0.02 0.06	71.50 82.9	3/1954 5/1954	Given Origin incorrect—no purple stained seed found.
S-774	Redtop	John D. Lyon, Inc., Cambridge, Mass. Metropolitan District Commission, Weston No. 2866.....	L 92.00 F 93.19	0.90 1.57	5.90 4.02	1.20 1.22	90.00 91.00	1/1954 4/1954	Weed seed exceeds that stated.
1304	Corn	The Page Seed Co., Greene, N. Y. J. L. Dunnell & Sons, Bernardston. Pride of York, No. 3002..... (Origin—Penn.)	L 99.00 F 99.92	0.00 0.00	1.00 0.08	0.00 0.00	89.00 58.00	2/1954 6/1954	Germination below that stated.
1027	Corn	Weld & Beck Co., Southbridge Golden Sweepstakes, No. 3002..... (Origin—Penn.)	L 99.00 F 100.00	0.00 0.00	1.00 0.00	0.00 0.00	85.00 73.00	2/1954 6/1954	Germination below that stated.
1025	Corn	Lancaster Sure Crop, No. 2018..... (Origin—Penn.)	L 99.00 F 100.00	0.00 0.00	1.00 0.00	0.00 0.00	85.00 62.00	3/1954 6/1954	Germination below that stated.
842	Clover	Pedigreed Seed Co., Jersey City, N. J. Wm. H. Casey Store, Milford Fancy White, No. 12748..... AMS-41	L 98.15 F 98.54	0.10 0.13	0.05 0.12	1.70 1.21	71-25 85-3	3/1954 8/1954	Noxious weeds not declared, but 5 Buckhorn plantain per oz. found.

Table 1. Results of Inspection and Analyses of Field Seeds—Continued.

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed, Origin and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
Philadelphia Seed Co., Philadelphia, Pa.									
Philadelphia Seed Co., (Warehouse)									
865	Fescue	Charleston Chewings, No. M-538	L 98.45 F 97.87	0.48 1.16	0.60 0.65	0.47 0.32	90.00 94.00	3 1954 5 1954	Weed seed exceeds that stated.
870	Red Fescue	Philadelphia Seed Co., (Warehouse) Charleston Creeping, No. M 522	L 96.00 F 94.72	0.04 0.15	3.96 4.10	0.00 1.03	85.00 56.00	1 1954 8 1954	Other Crop Seed not declared, but 1.03% found . Germination below that stated.
863	Red Fescue	Philadelphia Seed Co., (Warehouse), Charleston Illabee, No. M-533	L 98.90 F 98.92	0.10 0.14	1.00 0.94	0.00 0.00	89.00 78.00	2 1954 7 1954	Germination below that stated.
866	Ryegrass	Philadelphia Seed Co., (Warehouse), Charleston Perennial, No. K-200	L 98.50 F 98.77	0.90 0.89	0.30 0.16	0.30 0.18	90.00 77.00	2 1954 8 1954	Germination below that stated.
869	Poa Trivialis	Philadelphia Seed Co., (Warehouse), Charleston No. K-259	L 89.50 F 90.09	0.20 0.83	10.30 8.92	0.00 0.16	85.00 51.00	2 1954 8 1954	Weed seed exceeds that stated. Germination below that stated.
S-738	Orchard Grass	Wm. G. Scarlett & Co., Baltimore, Md. Grafton State Hospital, No. Grafton No. 17068	L 93.93 F 93.27	0.10 0.64	5.97 6.07	0.00 0.02	95.50 96.00	1 1954 4 1954	Noxious weeds exceed that stated. 18 Wild Onion bulblets and 1 Buckhorn plantain per oz. found.
S-755	Rye	Phillips Wild Life Laboratory, Upton Variety Unknown, No. 17596	L 97.50 F 99.25	0.50 0.12	1.80 0.55	0.20 0.08	80.00 77.00	3 1954 3 1954	Noxious weeds exceed that stated. 17 Corncockle and 2 Wild Onion bulblets found in 440 grams.
S-279	Ryegrass	Worcester State Hospital, Worcester Domestic, No. 8330	L 99.82 F 98.96	0.00 0.64	0.14 0.46	0.04 0.00	94.00 95.00	12 1953 5 1954	Purity below that stated. Weed seeds not declared, but 0.64% found . Inert matter exceeds that stated.

Table 1. Results of Inspection and Analyses of Field Seeds—Concluded.

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed, Origin and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
Stanford Seed Co., Buffalo, N. Y.									
953	Buckwheat	B. W. Brown Grain Co., Concord Silverhull, No. 5008.....	L 99.90	0.00	0.08	0.02	80.00	1/1954	Germination below that stated.
			F 99.90	0.00	0.06	0.04	36.00	7/1954	
778	Buckwheat	Cutler Grain Co., Framingham Silverhull, No. 5008.....	L 99.90	0.00	0.08	0.02	85.00	1/1954	Germination below that stated.
			F 99.74	0.00	0.11	0.15	39.00	4/1954	
1088	Buckwheat	New Bedford Grain Co., New Bedford Silverhull, No. 5008.....	L 99.90	0.00	0.08	0.02	80.00	1/1954	Germination below that stated.
			F 99.92	0.00	0.04	0.04	34.00	7/1954	
Whitney Seed Co., Buffalo, N. Y.									
644	Alfalfa	Farm Bureau Assoc., Waltham Certified Ranger, No. 2132 (*).....	L 99.86	0.04	0.10	0.00	85.5	1/1954	*Required information not given.
			F 99.94	0.00	0.06	0.00	94.2	4/1954	

Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261 C

Each mixture of agricultural seeds shall be labeled to show the commonly accepted name and variety of each agricultural seed component in excess of five percent of the whole and the percentage, by weight, of each in the order of its predominance. The word "mixture" or the word "mixed" shall be shown conspicuously on the label. Other label requirements for mixtures are the same as those for field seeds; hence, are not repeated here since they will be found under Table 1.

Forty-one mixtures were received, but only 32 were found to vary sufficiently from the label requirements to justify the statement of complete analysis in this table. Items which are mislabeled, also the name and address of the wholesaler, are printed in boldface type.

Table 2

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components		Germination	Pure Seed	Weed Seed	Inert Matter	Other Crop Seed	Date of Test	Remarks		
											Label	Found
		Label	Found									
Associated Seed Growers, Inc., Cambridge, N. Y.												
11126	Sears, Roebuck & Co., Pittsfield											
	Supertine, AMS 26, No. 4012				L 95.51	0.17	5.53	0.15	1 1954	Components not listed in order of predominance.		
				F	0.14	4.30	0.05	6 1954				
	Components:											
	Kentucky Bluegrass	25.50	27.70	80.00	85.00							
Creeping Red Fescue	58.69	57.88	85.00	86.00								
11128	Highland Colonial Bent	9.96	9.93	83.00	82.00							
	Mixed White Clover, No. 4006				L 99.40	0.20	1.55	0.25	1 1954	Labeled "Mixed White Clover." Should have been labeled "White and Alsike Clover Mixture."		
				F	0.18	0.32	0.10	6 1954				
	Components:											
	White Dutch Clover	90.00	87.62	77-13	93-4							
Alsike Clover	8.00	11.78	77-13	90-3								
Arthur R. Cone, Inc., Buffalo, N. Y.												
831	Skibiski Farm & Supply Co., So. Deerfield											
	Shade or Shine Mixture, No. 38 x 912				L 93.89	0.45	5.21	0.40	3 1954	Components not listed in order of predominance.		
				F 96.41	0.15	3.34	0.10	5 1954				

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks	
		Label	Found	Label	Found							
Arthur R. Cone, Inc., Buffalo, N. Y.— (Continued)												
Skibiski Farm & Supply Co., So. Deerfield												
Components:												
	Kentucky Bluegrass.....	8.50	8.89	75.00	81.00						Percentage exceeds that stated.	
	Domestic Ryegrass.....	26.73	27.74	90.00	95.00							
	Red Fescue.....	25.76	23.01	80.00	80.00							
	White Clover.....	4.90	8.32	65.25	83.16							
	Alta Fescue.....	19.20	18.59	80.00	98.00							
	Poa Trivialis.....	8.80	9.86	80.00	85.00							
Thomas F. Culkeen, Charlestown, Mass.												
Oak Grove Cemetery, Medford												
852	Special Mixture, Lot No. (*).....					L 94.41 F	* 0.39	* 5.14	* 0.06	* 4/1954	*Required information not given.	
Components:												
	Kentucky Bluegrass.....	30.00	13.12	*	76.00						Percentage below that stated.	
	Redtop.....	20.00	17.69	*	95.00							
	Perennial Ryegrass.....	20.00	15.70	*	85.00							
	Trivialis.....	15.00	9.84	*	62.00							
	Domestic Chewings Fescue.....	15.00		*								
	Domestic Ryegrass.....		15.68		85.00						Percentage below that stated.	
	Creeping Red Fescue.....		22.38		78.00							
Edgewood Farms, Inc., Marysville, Ohio												
J. J. Newberry Co., Pittsfield												
11137	*White Dutch Clover, No. 878002.....					L 97.00 F 99.04	0.49 0.35	1.51 0.38	1.00 0.23	3/1954 8/1954		*Labeled "White Dutch Clover." Should have been labeled "White and Alsike Clover Mixture."
Components:												
	White Clover.....	97.00	88.98	60.20	94.4							
	Alsike Clover.....		10.06		93.3							

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
851	Garden State Seed Co., Irvington, N. J. Lehco Stores (South End Hdw Co., Branch) Cambridge *White Clover Mixture, No. 341-11.....					L 98.75 F 98.67	0.58 0.57	0.80 0.66	0.40 0.10	2 1954 5 1954	Ingredients total more than 100%; *Labeled "White Clover Mixture."
	Components: White Clover..... Hop Clover.....	60.25 38.50	60.97 37.70	80-5 76-14	77-5 82-9						Should have been labeled "White Clover and Hop Clover Mixture." Noxious Weeds not declared but 9 Buckhorn Plantain per oz. found.
896	Budd D. Hawkins, Reading, Vt. Methe Grain Co., Westfield Competition Mixture, No. H-402.....					L F 99.50	0.41 0.20	1.08 0.15	.... 0.15	2 1954 5 1954	Percentage exceeds that stated.
	Components: Domestic Ryegrass..... Timothy..... Alfa Fesque..... White Clover.....	59.40 29.40 8.73 0.98	55.44 35.26 7.66 1.14	90.00 90.00 90.00 90-9	90.00 90.00 86.00 90-9						Percentage exceeds that stated.
1091	John D. Lyon, Inc., Cambridge, Mass. City of Boston, Back Bay Yard, Boston Shady Special, No. 11188.....					L 96.10 F 93.37	0.50 0.44	3.40 4.91	.... 1.28	1 1954 5 1954	Components not listed in order of predominance. Inert matter exceeds that stated. Other Crop Seed not declared but found excessive.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found								Label	Found
John D. Lyon, Inc., Cambridge, Mass.—(Continued)										
City of Boston, Back Bay Yard, Boston										
Components:										
Highland Bent.....										
14.70 90.00										
39.20 80.00										
Creeping Red Fescue.....										
9.20 8.52 60.00										
Kentucky Bluegrass.....										
27.12 90.00										
Domestic Ryegrass.....										
24.50 85.00										
Agrostis spp.....										
20.47 85.00										
(Redtop & Highland Bent)										
Festuca sp.....										
37.26 85.00										
Appears to be Chewings Fescue.										
Declared but Redtop & Highland Bent found. Germination below that stated.										
871										
City of Boston, Franklin Park Storehouse, Boston										
Special Mixture, No. 11190.....										
L 92.40 0.15 7.15 ... 1/1954										
F 91.03 0.84 6.64 1.49 4/1954										
Components not listed in order of predominance. Weed Seed exceeds that stated. Other Crop Seed not declared but found excessive.										
Declared but Ranier & Chewings found.										
Percentage & Germination below that stated.										
Declared but not found.										
Percentage exceeds that stated.										
Found but not declared.										
Found but not declared.										
Components not listed in order of predominance. Other Crop Seed not declared but found excessive.										
951										
City of Boston, George Wright Golf Course, Hyde Park										
Special Mixture, No. 11023.....										
L 92.40 0.45 7.15 ... 2/1954										
F 92.32 0.36 5.93 1.39 4/1954										
Components not listed in order of predominance. Other Crop Seed not declared but found excessive.										

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components		Germination		Pure Seed	Weed Seed	Inert Matter	Other Crop Seed	Date of Test	Remarks
		Label	Found	Label	Found						
952	John D. Lyon, Inc., Cambridge, Mass.—(Continued)										
	City of Boston, George Wright Golf Course, Hyde Park										
	Components:										
	Chewings Fescue	24.75	80.00						Declared but not found. Percentage below that stated. Germination below that stated. Declared but not found. Declared but only 3 seeds found. Found but not declared. Found but not declared.
	Kentucky Bluegrass	38.25	16.21	80.00	59.00						
	Redtop	9.80	.....	90.00	.....					
	Perennial Ryegrass	19.60	.....	90.00	.....					
	Creeching Red Fescue	.....	53.30	.....	80.00					
	Highland Bent	.....	22.81	.....	85.00					
	Special Mixture, No. 11089	L 98.40 F 94.55	0.68 0.87	0.92 3.95 0.63	1 1954 5 1954	Components not listed in order of predominance. Inert Matter exceeds that stated. Other Crop Seed not declared but found excessive.
	Colonial Bent	19.60	.....	90.00	.....					
	Creeching Red Fescue	39.60	33.23	80.00	93.00						
	Redtop	39.20	.....	90.00	.....					
	Agrostis spp. (Redtop & Highland Bent)	.....	61.32	.....	86.00					
Department of Public Works, Maynard											
S-1386	Plot Mixture, No. 13315.										
	Components:										
	Creeching Red Fescue	49.80	47.27	70.00	79.00						Components not listed in order of predominance. Other Crop Seed exceeds that stated.
	Kentucky Bluegrass	17.00	16.05	80.00	74.00						
	Redtop	18.40	.....	90.00	.....					
	Agrostis spp. (Redtop & Highland Bent)	.....	20.88	.....	88.00					
	Colonial Bent	.....	.....	.....	.....	L 85.90 F 84.20	0.35 0.68	13.95 14.07	0.40 1.10	1 1954 7 1954
	Creeching Red Fescue						Declared but Redtop & Highland Bent found.
	Kentucky Bluegrass	.....	.....	.....	.....		
	Redtop	.....	.....	.....	.....		
	Agrostis spp. (Redtop & Highland Bent)	.....	.....	.....	.....		
	Colonial Bent	.....	.....	.....	.....		

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found								Label	Found
John D. Lyon, Inc., Cambridge, Mass.—(Continued)										
S-1385	Department of Public Works, Garage, Newburyport									
	Plot Mixture, No. 13317				L 85.20 F 84.11	0.45 0.67	13.95 13.68	0.40 1.54	1/1954 7/1954	Components not listed in order of predominance. Other Crop Seed exceeds that stated.
	Components:									
	Creeping Red Fescue	49.80	44.40	70.00	87.00					
	Kentucky Bluegrass	17.00	16.84	80.00	75.00					
S-1379	Department of Public Works, Worcester									
	Special Plot, No. 13601				L 85.20 F 82.49	0.45 0.61	13.95 16.30	0.40 0.60	* 6 1954	Components not listed in order of predominance. *Required information not stated.
	Components:									
	Creeping Red Fescue	49.80	42.05	70.00	95.00					
	Kentucky Bluegrass	17.00	14.81	80.00	73.00					
S-1380	Slopes Mixture, No. 13601				L 96.55 F 97.74	0.40 0.65	2.85 1.29	0.20 0.32	1/1954 6/1954	Components not listed in order of predominance.
	Components:									
	Creeping Red Fescue	24.25	22.54	85.00	94.00					
	Alta Fescue	29.10	27.38	85.00	90.00					
	Domestic Ryegrass	13.80	19.86	90.00	88.00					
S-1380	*Alsike & White Clover	9.80	12.04	78-12	80-13					Declared but Redtop & Highland Bent found. *Percentage and Germination of each kind of seed required.
	Agrostis spp. (Redtop & Highland Bent)		16.92		88.00					

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture. Dealer When Other Than Wholesale Distributor, and Place Collected	Components		Germination		Pure Seed	Weed Seed	Inert Matter	Other Crop Seed	Date of Test	Remarks
		Label	Found	Label	Found						
S-1377	John D. Lyon Inc., Cambridge, Mass.—(Continued)										
	Department of Public Works, Camp Myles Standish, Taunton										
	Special Plot Mixture, No. 13433					L 85.20 F 82.98	0.45 0.80	13.90 15.43	0.40 0.79	1/1954 6/1954	Components not listed in order of predominance. Other Crop Seed exceeds that stated.
	Components:										
	Red Creeping Fescue	49.80	42.84	70.00	91.00						
S-1383	Kentucky Bluegrass	17.00	15.58	80.00	77.00						
	Redtop	18.40		90.00							
	Agrostis spp. (Redtop & Highland Bent)		24.56		85.00						Declared but Redtop and Highland Bent found.
	Department of Public Works, Vine St. Garage, Middleboro										
	Plot Mixture, No. 13316					L 85.20 F 83.62	0.45 1.05	13.95 14.72	0.40 0.61	1/1954 7/1954	Components not listed in order of predominance. Weed Seed exceeds that stated.
S-1384	Components:										
	Creeping Red Fescue	49.80	44.47	70.00	86.00						
	Kentucky Bluegrass	17.00	16.19	80.00	77.00						
	Redtop	18.40		90.00							
	Agrostis spp. (Redtop & Highland Bent)		22.96		88.00						Declared but Redtop & Highland Bent found.
S-1384	Slope Mixture No. 13316					L 96.55 F 97.58	0.40 0.66	2.85 1.55	0.20 0.21	1/1954 7/1954	Components not listed in order of predominance.
	Components:										
	Cr. Red Fescue	24.25	24.61	85.00	91.00						
	Alta Fescue	29.10	28.93	85.00	88.00						
	Redtop	13.80	15.90	90.00	93.00						
	Domestic Ryegrass	19.60	16.77	90.00	88.00						
	*Alsike & White Clover	9.80	11.37	78-12	77-13						*Percentage and Germination of each kind required.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components		Pure Seed	Weed Seed	Inert Matter	Other Crop Seed	Date of Test	Remarks
		Label	Found						
885	Pedigreed Seed Co., Jersey City, N. J. I. B. Barrow Co., Worcester Marvelgrass Mixture, Lot No. (*)			L F	0.46 0.27	6.18 7.83	0.94 0.91	2 1954 6 1954	Components not listed in order of predominance. * Required information not given.
862	Philadelphia Seed Co., Philadelphia, Pa. Philadelphia Warehouse, T. F. Culkeen, Charlestown Old English, No. 469			L F	0.30 0.71	4.94 4.67	1 1.42	1 1954 5 1954	Other Crop Seed not declared but found excessive. Weed Seed exceeds that stated.
861	O. E. Superfine Mixture, No. 447			L F	0.35 0.68	12.10 13.88	1 1.20	1 1954 6 1954	Weed Seed exceeds that stated. Other Crop Seed not declared but found excessive.
885	Pedigreed Seed Co., Jersey City, N. J. I. B. Barrow Co., Worcester Marvelgrass Mixture, Lot No. (*)	Components:							
		Perennial Ryegrass	24.69	22.42	80.00	83.00			
		Red Creeping Fescue	25.18	24.40	80.00	90.00			
		Timothy	14.91	18.50	80.00	85.00			
		Domestic Ryegrass	16.83	13.24	90.00	83.00			
		Poa Trivialis	5.87	6.16	80.00	89.00			
		New Zealand White Clover	4.94	6.27	80.00	83-12			
862	Philadelphia Seed Co., Philadelphia, Pa. Philadelphia Warehouse, T. F. Culkeen, Charlestown Old English, No. 469	Components:							
		Chewings Fescue	24.50	...	90.00	...			
		Creeping Red Fescue	23.75	...	90.00	...			
		Domestic Ryegrass	17.64	16.66	90.00	95.00			
		Kentucky Bluegrass	12.75	12.70	70.00	80.00			
		*Mixed Bent	5.82	...	85.00	...			
861	O. E. Superfine Mixture, No. 447	Components:							
		White Clover	5.70	8.36	75-10	78-21			
		Agrostis spp.	...	14.39	...	86.00			
		(Redtop & Highland Bent)							
		Festuca spp.	...	41.09	...	88.00			
		(Chewings and Creeping Red Fescue)							
		Redtop	4.60	...	85.00	...			

*"Mixed Bent" not sufficient.
Highland Bent found.
Percentage exceeds that stated.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label Found		Label Found							
Philadelphia Seed Co., Philadelphia, Pa.—Continued Philadelphia Warehouse, T. F. Culkeen, Charlestown											
933	Components:										Germination below that stated.
	Kentucky Bluegrass.....	39.00	36.93	80.00	65.00						Germination below that stated.
	Redtop.....	14.70		90.00							*"Bent" not sufficient. Seaside Bent found.
	Perennial Ryegrass.....	14.65	13.20	90.00	81.00						
	*Bent.....	14.40		90.00							
	White Clover.....	4.80	5.40	65-30	82-14						
	Agrostis spp.....		28.71		88.00						
	(Redtop & Seaside Bent)										
	Reddi Mix Products, Everett, Mass.										
	Edgeworth Bargain Centre, Malden										
Truli Green, Lot No. (*).....					L 95.00 F 94.71	1.25 0.86	5.00 4.35	... 0.08	3/1954 5/1954	Components not listed in order of predominance. *Required information not given. Given formula exceeds 100%.	
934	Components:										Percentage less than that stated.
	Timothy.....	15.00	11.56	90.00	97.00						*"Clover" not sufficient. A mixture of White Blossom and Yellow Blossom Sweet Clover found.
	Domestic Ryegrass.....	65.00	69.28	90.00	92.00						Germination below that stated.
	Kentucky 31 Fescue.....	12.00	11.92	90.00	98.00						
	*Clover.....	3.00	1.95	85.00	73-5						*Required information not given. A mixture of White Blossom and Yellow Blossom Sweet Clover found.
	White Clover, Lot No. (*).....					L 99.50 F 99.55	0.20 0.17	0.30 0.09	... 0.19	*/* 8/1954	
	Found to be a Mixture										
	Components:										Germination below that stated.
	White Sweet Clover.....	99.50	91.59	80.00	64.3						
	Yellow Blossom Sweet Clover.....	...	7.96	...	...				

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components		Germination		Pure Seed	Weed Seed	Inert Matter	Other Crop Seed	Date of Test	Remarks
		Label	Found	Label	Found						
1094	Reddi Mix Products, Everett, Mass. —Continued Reddi Mix Products, Everett Contractor's Mixture, No. 2										
	Components:										
	*Ryegrass	62.57	62.52	99.00	97.00	L 82.76	0.53	15.28	2.37	4, 1954	Other Crop Seed exceeds that stated.
	Tall Fescue	7.84	7.14	96.00	98.00	F 82.76	0.31	13.20	3.73	5, 1954	
	Timothy	7.64	8.49	97.00	96.00						**"Ryegrass" not sufficient. Domestic Ryegrass found.
	*Sweet Clover	3.77	4.61	92.00	83-4						
											**"Sweet Clover" not sufficient. A mixture of White and Yellow Blossom Sweet Clover found. Germination below that stated.
785	Ross Bros. Co., Worcester, Mass. Ashland Hardware Co., Ashland Shady Lawn Mixture, No. 304										
	Components:										
	Creeping Fescue	49.89	51.34	90.00	89.00	L 96.71	0.07	3.15	0.07	2, 1954	Inert Matter exceeds that stated.
	Domestic Ryegrass	19.10	20.88	90.00	94.00	F 93.37	0.20	6.36	0.07	4, 1954	
	Redtop	9.74	6.30	90.00	85.00						Percentage below that stated.
	Poa Trivialis	9.29	7.29	90.00	92.00						
	Kentucky Bluegrass	8.69	7.56	75.00	76.00						
S-1	Wm. G. Scarlett Co., Baltimore, Md. Symmes Grain Co. (Scarlett Warehouse) Winchester Special Mixture (Metropolitan District Commission), No. 17231										
	Components:										
	Creeping Red Fescue	44.35	35.80	95.00	59.00	L 96.33	0.50	1.60	0.20	9, 1953	Inert Matter exceeds that stated. Other Crop Seed exceeds that stated.
						F 96.33	0.48	2.47	0.72	12, 1953	
	Domestic Ryegrass	24.75	29.00	90.00	95.00						Percentage below that stated. Germination below that stated.
	Highland Bent	14.80		95.00							
	Redtop	13.80		90.00							Germination below that stated.
	Agrostis spp. (Redtop & Highland Bent)		31.53		83.00						

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Concluded

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks		
		Label	Found	Label	Found								
776	Stanford Seed Co., Buffalo, N. Y. Cutler Grain Co., Framingham Liberty Mixture, No. 5001-J												
	Components:												
	Domestic Ryegrass	24.75	20.75	85.00	93.00	L	0.80	12.44	0.90	3/1954	Percentage exceeds that stated.		
	Red Fescue	23.75	20.06	85.00	79.00	F	0.53	12.74	0.61	4/1954			
	Timothy	11.64	15.42	85.00	88.00								
	Kentucky Bluegrass	9.07	10.37	75.00	82.00								
	Canada Bluegrass	6.00	5.87	75.00	88.00								
	Poa Trivialis	5.40	6.33	85.00	89.00						Percentage exceeds that stated.		
	White Clover	5.25	7.32	75.00	85.00								
777	Shady Mixture, No. 5004-J												
	Components:												
	Domestic Ryegrass	33.95	35.23	85.00	95.00	L	0.80	8.35	...	3/1954		Percentage below that stated. Percentage exceeds that stated. Germination below that stated.	
	Red Fescue	26.60	28.02	85.00	92.00	F	0.62	9.02	0.14	4/1954			
	Poa Trivialis	15.30	9.02	85.00	83.00								
	Canada Bluegrass	7.00	10.33	75.00	79.00								
	Redtop	5.00	3.88	80.00	56.00								
	Kentucky Bluegrass	3.00	3.74	75.00	76.00								
641	Whitney Seed Co., Buffalo, N. Y. Farm Bureau Assoc., Waltham Shady Mixture, No. 5554												
	Components:												
	Poa Trivialis	19.00	18.90	80.00	91.00	L	0.30	4.25	...	2/1954	Components not listed in order of predominance. Other Crop Seed not declared but found excessive.		
	Creeping Red Fescue	19.40	...	85.00	...	F	0.46	5.97	1.25	3/1954			
	Chewings Fescue	19.60	...	80.00	...								
	Domestic Ryegrass	14.85	14.06	90.00	95.00								
	Canada Bluegrass	8.50	6.90	80.00	84.00								
	Redtop	9.20	...	85.00	...						Percentage below that stated.		
	Colonial Bentgrass	9.20	...	85.00	...								
	Agrostis spp.	4.90	...	90.00	...								
	(Redtop & Highland Bent)	...	17.44	...	91.00								
	Festuca spp.	...	35.02	...	92.00								
	(Creeping Red Fescue & Chewings Fescue)												

Results of Inspection and Germination of Vegetable Seeds Sections 261 B2 and 261 C.

Each separate container of Vegetable Seeds must be labeled to indicate plainly the kind of seed and variety and the name and address of the person who labeled such seed or who sells, offers, or exposes it for sale. For seeds that germinate less than the Massachusetts Standard, the label must also indicate the percentage of germination exclusive of hard seeds, percentage of hard seeds if present, calendar month and year the test was completed, and the words "Below Standard" in not less than 8-point type. Date of test shall not be more than nine months old, exclusive of the month in which the test was completed. Seed that has a false or misleading label may not be sold or offered for sale.

Seven hundred and twenty-nine samples of vegetable seeds were received and tested in the laboratory; however, Table 3 includes only those samples that were found to be mislabeled with regard to requirements of law.

The wholesaler's name, in all instances, and the germination for those samples of seed found below standard in germination are in boldface type. In samples for which the found germination is not in boldface, the germination is above standard but below germination stated.

Table 3

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Germination				
			Given		Found		Mass. Standard
			%	Date of Test	%	Month of Test	
796	Beans	Associated Seed Growers, Inc., Milford, Conn.					
		Pierce Hardware Co., Taunton Top Crop, No. 16214.....	80	10/1953	69	4/1954	75
S-281	Dandelion	Joseph Breck & Sons, Inc., Boston, Mass.					
		Westboro State Hospital, Westboro Thick Leaf, No. 5916.....	50	1/1954	25	3/1954	45
839	Endive	W. Atlee Burpee Co., Philadelphia, Penn.					
		Wm. H. Casey Store, Milford Broad Leaved Batavian, No. 5027	80	12/1953	67	5/1954	70
1347	Mustard	C. P. Coburn Co., Lowell Southern Giant Curled.....	80	12/1953	69	6/1954	75
1223	Parsnip	E. J. Mahoney, Bradford Long Smooth Hollow Crown.....	65	2/1954	50	6/1954	60
110	Lettuce	Comstock, Ferre & Co., Wethersfield, Conn.					
		Essex County Co-op. Farming Assoc., Topsfield Great Lakes.....	87	12/1953	65	3/1954	80
1246 F	Squash	Arthur R. Cone, Inc., Buffalo, N. Y. Wallace Grain Co., Clinton Butternut.....	85	2/1954	68	5/1954	75
1232	Pepper	Budd D. Hawkins, Reading, Vermont Mighori's, Haverhill Green (*).....	55	1/1954	85	6/1954	55
1069	Chicory	D. Landreth Seed Co., Philadelphia, Penn. Chace Grain Co., No. Westport					
1070	Onion	Cicoria Catalogna..... White Portugal.....	70	**/1954	27	5/1954	70

(*) Variety required. Green not a variety.

(**) Required information not given.

**Table 3 Results of Inspection and Germination of Vegetable Seeds
Sections 261 B2 and 261 C. (Concluded)**

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Germination				Mass. Stand- ard
			Given		Found		
			%	Date of Test	%	Month of Test	
Smith Mills Hardware Co., No. Dartmouth							
1080	Onion	Yellow Globe Danvers.....	70	.....	59	5/1954	70
1084	Pepper	Large Thick Hot.....	75	.....	16	5/1954	55
Mandeville & King Co., Rochester, N.Y. Parkway Gardens, Dorchester							
1334	Kale	Blue Scotch.....	85	**/1954	57	6/1954	75
1333	Lettuce	Romaine (Cos).....	85	**/1954	62	6/1954	80
The Page Seed Co., Greene, N. Y. A. W. Baldwin & Co., Inc., West Stockbridge							
1172	Pepper	Green (*).....	75	1/1954	80	5/1954	55
1173	Salsify	Mammoth Sandwich Island.....	80	1/1954	53	5/1954	75
Lee Hardware Co. Common.....							
1123	Dandelion		75	1/1954	32	5/1954	45
Pelletized Seed Co., New York City F. W. Woolworth Co., No. Adams							
1197	Lettuce	White Boston.....	..	**/1954	62	6/1954	80
Randolph Seed Co., E. Randolph, N. Y. Berkshire Feed & Farmers Supply Co., Pittsfield							
1165	Chicory	Witloof.....	..	.....	42	5/1954	65
1158	Collards	Georgia or Southern.....	..	.....	53	6/1954	80
1161	Onion	Yellow Globe Danvers.....	..	.....	2	6/1954	70
1164	Radish	Ea. Scarlet Globe.....	..	.....	53	6/1954	75
Joseph Sordillo & Sons, Boston, Mass. (*).....							
1206	Broccol		..	.....	5	6/1954	75
1208	Onion	(*).....	..	.....	89	6/1954	70
F. H. Woodruff & Sons, Inc., Milford, Conn. Farm Bureau Assoc., Waltham							
639	Beans	Fordhook Bush Lima 242, No. 4-5164.....	90	12/1953	61	3/1954	70
638	Beans	Wade, No. 0-542.....	90	12/1953	79	3/1954	75
Wrentham State School, Wrentham Great Lakes, No. 1-317-2C.....							
S-253	Lettuce		90	10/1953	79	3/1954	80

(*) Variety required. Green not a variety.

(**) Required information not given.

FIELD TESTS OF VEGETABLE SEEDS

Type and Variety Studies

Conducted by the Seed Laboratory

Waldo C. Lincoln, Jr., *Instructor*; Paul Korpita, *Laboratory Assistant*

Again this year, the nineteenth year, the Experiment Station has conducted tests to determine the trueness-to-type of various kinds of vegetable seed offered for sale in the State. The State Seed Inspector sampled a comprehensive collection of beets, carrots, radishes, Butter-nut squash and Des Moines squash. These samples of seed were taken at 60 retail establishments and represent the offerings of 31 seedsmen who wholesale seed in the State.

Table 4. Field Tests of Vegetable Seeds

BEETS

Forty-eight samples of beets representing 22 wholesalers and 33 retailers were planted on May 26. The lots were planted in 15-foot rows and duplicated at random in the field. All samples were hand-planted and hand-thinned. In addition to the 48 varieties, two check samples for each variety were duplicated at random in the plantings. The results of the tests are shown below.

Lab. No.	Wholesaler	Retailer	Variety	Percent Off Type	Remarks
116.....	Associated Seed Growers.....	Essex Co. Coop. Assoc., Topsfield	Detroit Dark Red.....	14.....	14% flat
124.....	Associated Seed Growers.....	Essex Co. Coop. Assoc., Topsfield	Asgrow Wonder.....	10.....	10% short top
792.....	Associated Seed Growers.....	Pierce Hardware Co., Taunton	Asgrow Wonder.....	4.....	4% short top
153.....	Joseph Breck & Sons.....	Joseph Breck & Sons, Boston	Harvard.....	0.....	
154.....	Joseph Breck & Sons.....	Joseph Breck & Sons, Boston	Beets All.....	0.....	
155.....	Joseph Breck & Sons.....	Joseph Breck & Sons, Boston	Crosby's Egyptian.....	12.....	10% Globe—2% long top
916.....	W. Atlee Burpee Co.....	Checkerboard Feed Co., E. Longmeadow	Detroit Dark Red.....	12.....	4% oval—8% flat

Table 4. Field Tests of Vegetable Seeds—Continued.

BEETS

Tab. No.	Wholesaler	Retailer	Variety	Percent Off Type	Remarks
843.	W. Allee Burpee Co.	Jacque Hardware Co., Milford	Boston Crosby or Early Wonder	12.	8% short top—4% flat
844.	W. Allee Burpee Co.	Jacque Hardware Co., Milford	Detroit Dark Red	8.	8% flat
1226	W. Allee Burpee Co.	E. J. Mahoney Co., Bradford	Crosby's Egyptian	18.	18% Globe
59.	Comstock-Perre Co.	City Per Shop, Fall River	Detroit Dark Red	4.	4% flat
106.	Comstock-Perre Co.	Essex Co. Corp. Assoc., Topsheld	Crosby's Egyptian	18.	16% oval—2% Globe
114.	Comstock-Perre Co.	Essex Co. Corp. Assoc., Topsheld	Detroit Dark Red	18.	2% oval—14% flat—2% long top
218.	Comstock-Perre Co.	Flynn's Hardware Co., Attleboro	Crosby's Egyptian	4.	4% Globe
217.	Comstock-Perre Co.	Flynn's Hardware Co., Attleboro	Detroit Dark Red	12.	8% flat—4% oval
1249.	Arthur R. Cone	Wallace Grain Co., Clinton	Detroit Dark Red	5.	5% flat
1148.	Crosman Seed Corp.	S. S. Kresge Co., Pittsfield	Crosby's Egyptian	16.	16% Globe
622.	Eastern States Farmers Exch.	Eastern States Farmers Exch., Taunton	Perfected Detroit	0.	
19.	Eastern States Farmers Exch.	Eastern States Farmers Exch., Waltham	Eastern Wonder	2.	2% short top
20.	Eastern States Farmers Exch.	Eastern States Farmers Exch., Waltham	Perfected Detroit	0.	
832.	Ferry-Morse Seed Co.	Leon Zocchi, Milford	Detroit Dark Red	10.	4% oval—6% flat
1020.	Fredonia Seed Co.	Aldrich Country Store, E. Northfield	Detroit Dark Red	24.	18% flat—6% oval
1271.	Thomas J. Grey Co.	Thomas J. Grey Co., No. Abington	Early Wonder	9.	9% short top
13.	Joseph Harris Co.	Joseph Harris Co., Lexington	Crosby's Egyptian	2.	2% long top
209.	Chas. C. Hart Seed Co.	Conlon & Donnelly Co., Attleboro	Detroit Dark Red	30.	30% flat
127.	Chas. C. Hart Seed Co.	C. V. Hayes, Bridgewater	Crosby's Egyptian	4.	4% Globe

Table 4. Field Tests of Vegetable Seeds—Continued

BEETS

Lab. No.	Wholesaler	Retailer	Variety	Percent Off Type	Remarks
963	Budd D. Hawkins	Blasberg's Toy & Hardware Co., Shelburne Falls	Early Blood	2	2% oval
233	Hygrade Seed Co.	Mills Consolidated School, Mills	Detroit Dark Red	14	12% oval—2% flat
1072	D. Landreth Seed Co.	Chace Grain Co., No. Westport	Early Blood	8	8% flat
651	The Page Seed Co.	J. H. Fairbanks Co., Bridgewater	Detroit Dark Red	14	4% long top—10% oval
1155	Randolph Seed Co.	Belshire Seed & Farmers, Pittsfield	Early Blood	22	22% flat
1011	J. B. Rice, Jr., Co.	Hamilton S. Cregar, E. Northfield	Detroit Dark Red	58	18% flat—40% oval
715	Ross Bros. Co.	Ross Bros. Co., Worcester	Crosby's Early Egyptian Extra Select	2	2% Globe
716	Ross Bros. Co.	Ross Bros. Co., Worcester	Detroit Dark Red	8	2% oval—6% flat
717	Ross Bros. Co.	Ross Bros. Co., Worcester	Early Wonder	8	8% short top
854	Vaughan Seed Store	B. W. Brown Grain Co., Concord	Early Wonder Special	10	10% flat
633	F. H. Woodruff & Sons	Farm Bureau Assoc., Walham	Crosby's Egyptian	2	2% short top
632	F. H. Woodruff & Sons	Farm Bureau Assoc., Walham	Detroit Dark Red	24	18% oval—4% long top—2% flat
811	F. H. Woodruff & Sons	Franklin Hardware Co., Warren	Detroit Dark Red	18	18% oval
601	F. H. Woodruff & Sons	General Mills, Inc., Middleboro	Detroit Dark Red	11	11% flat
602	F. H. Woodruff & Sons	General Mills, Inc., Middleboro	Woodruff's Early Wonder	12	12% short top
82	F. H. Woodruff & Sons	Oscar Hardware & Paint Co., Seekonk	Assaw Wonder	4	4% short top
83	F. H. Woodruff & Sons	Oscar Hardware & Paint Co., Seekonk	Detroit Dark Red	26	22% oval—4% flat
54	F. H. Woodruff & Sons	Walsham Hardware Co., Taunton	Detroit Dark Red	16	16% oval

Table 4. Field Tests of Vegetable Seeds—Continued.

BEETS

Lab. No.	Wholesaler	Retailer	Variety	Percent Off Type	Remarks
S-265	F. H. Woodruff & Sons.	Worcester State Hospital, Worcester	Crosby's Egyptian.	0	
S-240	F. H. Woodruff & Sons.	Wrentham State Hospital, Wrentham	Crosby's Egyptian.	100.	100% Globe
S-243	F. H. Woodruff & Sons.	Wrentham State Hospital, Wrentham	Detroit Dark Red.	26.	26% oval
786	S. D. Woodruff & Sons.	Ashland Hardware Co., Ashland	Crosby's Egyptian.	12.	8% long top—4% Globe

Field Tests of Vegetable Seeds

CARROTS

Seventy-one samples of carrot, representing 29 wholesalers and 43 retailers, were planted on May 27. The lots were planted in 10-foot rows and duplicated at random in the field. All samples were hand-planted and hand-thinned. Three check samples of each variety were duplicated at random in the plantings. The results of the tests are listed below.

Lab. No.	Wholesaler	Retailer	Variety	Percent Off Type	Remarks
747	Abbott & Cobb Co.	Robert Cassidy & Sons, Woburn	Hutchinson.	0.	
1006	Associated Seed Growers.	Avery Hardware Co., Northfield	Danvers Half Long.	4.	4% Cylindrical
118	Associated Seed Growers.	Essex Co. Coop. Farmers Assoc., Topsfield	Imperator.	12.	12% Cylindrical
793	Associated Seed Growers.	Pierce Hardware Co., Taunton	Long Imperator	0.	
1135	Associated Seed Growers.	Sears, Roebuck & Co., Pittsfield	Chantenay.	0	

Table 4. Field Tests of Vegetable Seeds—Continued.

CARROTS

Lab. No.	Wholesaler	Retailer	Variety	Percent Off Type	Remarks
140.....	Associated Seed Growers.....	United Coop. Farmers Assoc., Fitchburg	Long Orange.....	0	
141.....	Associated Seed Growers.....	United Coop. Farmers Assoc., Fitchburg	Nantes Improved Coreless.....	6	6% Gradual Taper
S-241.....	Boston Market Gardeners Assoc.....	Wrentham State Hospital, Wrentham	Hutchinson.....	6	6% Cylindrical
157.....	Joseph Breck & Sons, Inc.....	Joseph Breck & Sons, Inc., Boston	Amsterdam Forcing.....	0	
158.....	Joseph Breck & Sons, Inc.....	Joseph Breck & Sons, Inc., Boston	Breck's Golden Beauty.....	11	11% Gradual Taper
156.....	Joseph Breck & Sons, Inc.....	Joseph Breck & Sons, Inc., Boston	Imperida.....	0	
159.....	Joseph Breck & Sons, Inc.....	Joseph Breck & Sons, Inc., Boston	Supreme Half Long.....	0	
836.....	W. Atlee Burpee Co.....	W. Cassey Store, Milford	Danvers Half Long.....	0	
914.....	W. Atlee Burpee Co.....	Checkerboard Feed Store, East Longmeadow	Tendersweet.....	12	12% Cylindrical
915.....	W. Atlee Burpee Co.....	Checkerboard Feed Store, E. Longmeadow	Golden Heart.....	0	
148.....	W. Atlee Burpee Co.....	Clinton Hardware Co., Clinton	Tendersweet.....	2	2% Cylindrical
1224.....	W. Atlee Burpee Co.....	E. J. Mahoney, Bradford	Tendersweet.....	0	
850.....	Comstock, Ferre & Co.....	Cataldo's Hardware Co., Franklin	Coreless.....	8	8% Gradual Taper
849.....	Comstock, Ferre & Co.....	Cataldo's Hardware Co., Franklin	Tendersweet.....	34	34% Cylindrical
60.....	Comstock, Ferre & Co.....	City Pet Shop, Fall River	Imp. Danvers Half Long.....	2	2% light root color
61.....	Comstock, Ferre & Co.....	City Pet Shop, Fall River	Imp. Long Orange.....	12	12% light root color
112.....	Comstock, Ferre & Co.....	Essex Co. Coop. Farmers Assoc., Topsfield	Hutchinson.....	0	
222.....	Comstock, Ferre & Co.....	Flynn's Hardware Co., Attleboro	Tendersweet.....	36	36% Cylindrical
1248.....	Arthur R. Cone.....	Wallace Grain Co., Clinton	Danvers Half Long.....	4	4% Cylindrical

Table 4. Field Tests of Vegetable Seeds—Continued.

CARROTS

Lab. No.	Wholesaler	Retailer	Variety	Percent Off Type	Remarks
1096.	Crosman Seed Corp.	Beacon Grain Co.	Imp. Long Orange	0	
617.	Eastern States Farmers Exch.	Full River	Chantenay Red Cored.	0	
613.	Eastern States Farmers Exch.	Taunton	Danvers.	0	
616.	Eastern States Farmers Exch.	Taunton	Hutchinson	0	
615.	Eastern States Farmers Exch.	Taunton	Imperator Long Strain.	0	
612.	Eastern States Farmers Exch.	Taunton	Long Chantenay.	2.	2% Cylindrical
614.	Eastern States Farmers Exch.	Taunton	Nantes Long.	7.	7% Gradual Taper
742.	Frederick W. Eberle.	Robert Cassidy & Sons.	Hutchinson.	0	
834.	Ferry-Morse Seed Co.	Woburn	Nantes Strong Top.	18.	18% Gradual Taper
749.	Alexander Forbes Co.	Woburn	Hutchinson.	0	
1016.	Fredonia Seed Co.	Aldrich Country Store. E. Northfield	Chantenay	50.	26% Cylindrical—24% Long Gradual Taper—No uniformity in the shoulders and in the core—6% yellow skin
1270.	Thomas J. Grey Co.	Thomas J. Grey Co.	Chantenay.	0	
12.	Joseph Harris Co.	No. Abington	Nantes (Long Stain)	11.	11% Gradual Taper
208.	Chas. C. Hart Seed Co.	Lexington	Danvers Half Long.	6.	6% Cylindrical
207.	Chas. C. Hart Seed Co.	Conlon & Donnelly, Attleboro	Imp. Long Orange.	22.	22% Light root color
125.	Chas C. Hart Seed Co.	Conlon & Donnelly, Attleboro	Danvers Half Long Stump.	4.	4% Cylindrical
129.	Chas C. Hart Seed Co.	C. V. Hayes Co., Bridgewater	Hutchinson.	0	
69.	Chas C. Hart Seed Co.	C. V. Hayes Co., Bridgewater	Danvers Half Long Stump root.	10.	10% Cylindrical
		Munro Hardware Co. Somerset			

Table 4. Field Tests of Vegetable Seeds—Continued.

CARROTS

Lab. No.	Wholesaler	Retailer	Variety	Percent Off Type	Remarks
74	Chas C. Hart Seed Co.	Munro Hardware Co. Spartan	Scarlet Nantes Coreless	8	8% Gradual Taper
964	Budd D. Hawkins Co.	Blashong's Toy & Hardware Co. Stellarton Falls	Imp. Long Orange	0	
909	Budd D. Hawkins Co.	Franklin Hardware Co. Springfield	Imperator	10	10% Cylindrical
235	Hygrade Seed Co.	Mills Consolidated School. Mills	Chantenay Long Type	0	
888	D. Landreth Seed Co.	Frank Whitcomb. Amherst	Chantenay	0	
899	Michael Leonard Seed Co.	Hamilton & Atwater Co. Westfield	Imp. Long Orange	32	32% Light root color
901	Michael Leonard Seed Co.	Hamilton & Atwater Co. Westfield	Danvers	0	
990	Northrup, King & Co.	F. W. Woodworth Co. Springfield	Nantes or Coreless	31	31% Gradual Taper
813	The Page Seed Co.	Tucker Hardware Co. Watson	Danvers Half Long	4	4% Cylindrical
814	The Page Seed Co.	Tucker Hardware Co. Watson	Long Orange	0	
1157	Randolph Seed Co.	Perkshire Feed & Farming Pittsfield	Long Orange	0	
1009	J. B. Rice, Jr., Co.	Hamilton S. Cregar. Pittsfield	Imp. Long Orange	0	
713	Ross Bros. Co.	Ross Bros. Co. Worcester	Imperator	0	
714	Ross Bros. Co.	Ross Bros. Co. Worcester	Imp. Long Orange	0	
712	Ross Bros. Co.	Ross Bros. Co. Worcester	Nantes Imp. Coreless	15	15% Gradual Taper
705	Charles H. Rowe Co.	Robert Cassidy & Sons. Woburn	Danvers-Hutchinson Strain	4	No variety named Danvers-Hutchinson Strain is the Hutchinson type—4% Cylindrical
704	Vaughan's Seed Store	Robert Cassidy & Sons. Woburn	Hutchinson	0	
697	Vaughan's Seed Store	J. Shannon & Sons. Woburn	Hutchinson	0	

Table 4. Field Tests of Vegetable Seeds—Continued.

CARROTS

Lab. No.	Wholesaler	Retailer	Variety	Percent Off Type	Remarks
631	F. H. Woodruff & Sons	Farm Bureau Assoc., Waltham	Danvers Half Long	0	
630	F. H. Woodruff & Sons	Farm Bureau Assoc., Waltham	Hutchinson	0	
663	F. H. Woodruff & Sons	General Mills, Inc., Middleboro	Danvers Half Long	0	
84	F. W. Woodruff & Sons	Oscar's Hardware & Paint Co., Seekonk	Hutchinson	0	
809	F. H. Woodruff & Sons	Tucker Hardware Co., Warren	Imp. Long Orange	0	
46	F. W. Woodruff & Sons	Waldron Hardware Co., Taunton	Danvers Half Long	0	
45	F. H. Woodruff & Sons	Waldron Hardware Co., Taunton	Greater Chantenay	14	14% Cylindrical
44	F. H. Woodruff & Sons	Waldron Hardware Co., Taunton	Imp. Long Orange	14	14% Light root color
787	S. D. Woodruff & Sons	Ashland Hardware Co., Ashland	Chantenay Red Cored	0	
788	S. D. Woodruff & Sons	Ashland Hardware Co., Ashland	Danvers Half Long	4	4% Cylindrical
1112	S. D. Woodruff & Sons	Huntington Hardware Co., Huntington	Hutchinson	0	

Table 4. Field Tests of Vegetable Seeds—Continued.

RADISH

Forty-seven samples of radish representing 23 wholesalers and 32 retailers were planted on May 27. The lots were planted in 10-foot rows and duplicated at random in the field. All samples were hand-thinned. Two check samples for each variety were duplicated at random in the plantings. The results of the tests are listed below. Under the column "Remarks" in the table the word "top" is not to be confused with the word "Top" that is used in variety naming, but instead is the descriptive word used in describing the shape of the root.

Lab. No.	Wholesaler	Retailer	Variety	Percent Out Type	Remarks
690	Abbott & Cobb Co.	Devincent Bros., Waltham	Scarlet Globe Shoot Top	4	4% cylindrical
139	Associated Seed Growers, Inc.	United Coop. Farmers Assoc., Fitchburg	Scarlet Globe	1	1% intermediate top
163	Joseph Breck & Sons, Inc.	Joseph Breck & Sons, Inc., Boston	Cavalier	7	2% intermediate top—5% long top
161	Joseph Breck & Sons, Inc.	Joseph Breck & Sons, Inc., Boston	Cherry Belle	9	9% tapered
162	Joseph Breck & Sons, Inc.	Joseph Breck & Sons, Inc., Boston	French Breakfast	13	2% olive—8% long top—1% pink—2%, 50% white
160	Joseph Breck & Sons, Inc.	Joseph Breck & Sons, Inc., Boston	Long Icicle	0	
912	W. Atlee Burpee Co.	Checkerboard Feed Store, East Longmeadow	Burpee's Earliest Scarlet Button	27	5% long top—20% not marketable—2% pink
913	W. Atlee Burpee Co.	Checkerboard Feed Store, East Longmeadow	Sparkler	32	32% long top
147	W. Atlee Burpee Co.	Clinton Hardware Co., Clinton	White Icicle	0	
62	Comstock, Ferrie & Co.	City Pet Shop, Fall River	Early Scarlet Globe	21	11% long top—9% medium—1% pink
111	Comstock, Ferrie & Co.	Essex Co. Coop. Farmers Assoc., Topshfield	Early Scarlet Globe	17	16% long top—1% pink
225	Comstock, Ferrie & Co.	Flynn's Hardware Co., Attleboro	Early Scarlet Globe	17	17% long top
1098	Crosman Seed Corp.	J. A. Toppet Co., Northampton	Early Scarlet Globe	13	12% long top—1% pink
620	Eastern States Farmers Exch.	Eastern States Farmers Exch., Taunton	Cavalier	13	13% long top

Table 4. Field Tests of Vegetable Seeds—Continued.

RADISH

Lab. No.	Wholesaler	Retailer	Variety	Percent Out Type	Remarks
618	Eastern States Farmers Exch.	Eastern States Farmers Exch., Taunton	Cherry Belle	6	6% long top
621	Eastern States Farmers Exch.	Eastern States Farmers Exch., Taunton	Early Scarlet Globe	9	8% long top—1% pink
619	Eastern States Farmers Exch.	Eastern States Farmers Exch., Taunton	White Icicle	2	2% short taper
692	Frederick W. Eberle	Devincenzi Bros., Waltham	Cherry Belle	1	1% long top
691	Frederick W. Eberle	Devincenzi Bros., Waltham	Scarlet Globe Forcing	9	3% short top—6% long top
693	Frederick W. Eberle	Devincenzi Bros., Waltham	Scarlet Globe Select Short Top	8	8% long top
833	Ferry-Morse Seed Co.	Leon Zacchi, Milford	Early Scarlet Globe	12	10% long top—2% pink
1019	Fredonia Seed Co.	Aldrich Country Store, East Northfield	Early Scarlet Globe	12	2% intermediate top—10% long top
695	Joseph Harris Co.	Joseph Harris Co., Lexington	Cherry Belle	12	2% long top—2% purple—8% pink
11	Joseph Harris Co.	Joseph Harris Co., Lexington	Cavalier	9	2% long top—7% elongated
904	Chas. C. Hart Seed Co.	Hamilton & Atwater Co., Westfield	Scarlet Globe	43	39% long top—3% purple—1% pink
204	Chas. C. Hart Seed Co.	Conlon & Donnelly Co., Attleboro	Early Scarlet Globe	39	31% every shape—4% purple—4% pink
132	Chas. C. Hart Seed Co.	C. V. Hayes Co., Bridgewater	Early Scarlet Globe	24	18% long intermediate top—2% pink—4% purple
965	Budd D. Hawkins	Blasberg's Toy & Hardware Co., Shelburne Falls	New French Breakfast	7	5% long top—2% olive shape
232	Hygrade Seed Co.	Millis Consolidated School, Millis	Sparkler	12	3% long top—4% white tip
234	Hygrade Seed Co.	Millis Consolidated School, Millis	Scarlet Globe	18	18% long top
889	D. Landreth Seed Co.	Frank Whitcomb, Amherst	Scarlet Globe Medium Top	5	5% intermediate top
989	Northrup, King & Co.	F. W. Woolworth Co., Springfield	White Icicle	0	
652	The Page Seed Co.	J. H. Fairbanks Co., Bridgewater	Early Scarlet Globe Medium Top	26	14% long top—12% reversed long top

Table 4. Field Tests of Vegetable Seeds—Continued.

RADISH

Lab. No.	Wholesaler	Retailer	Variety	Percent Off type	Remarks
1164	Randolph Seed Co.	Berkshire Feed & Farners Supply, Pittsfield	Early Scarlet Globe	43	41% long top—1% purple—1% scarlet
1010	J. B. Rice, Jr., Co.	Hamilton S. Cream, East Northfield	French Breakfast	82	10% White Icicle—9% Globe—25% olive shape—35% long top—3% purple
709	Ross Bros. Co.	Ross Bros. Co., Worcester	Cherry Belle	7	7% long top
710	Ross Bros. Co.,	Ross Bros. Co., Worcester	French Breakfast	12	11% long top—1% is 50% white
711	Ross Bros. Co.	Ross Bros. Co., Worcester	White Icicle	2	2% short taper
1209	Joseph Scudillo & Sons	Joseph Scudillo & Sons, Boston	Long Red		Long red not a variety—probably Cincinnati Market
629	F. H. Woodruff & Sons	Farm Bureau Assoc., Wadsworth	Cavalier	7	3% Globe shape—4% long top
628	F. H. Woodruff & Sons	Farm Bureau Assoc., Wadsworth	Early Scarlet Globe	12	12% long top
1176	F. H. Woodruff & Sons	Harland B. Foster, Inc., Co. Burlington	Woodruff's Beauty	7	7% long top
86	F. H. Woodruff & Sons	Oscar Hardware Co., Seekonk	Scarlet Globe Short Top	7	4% long top—1% cylindrical 8% pink
810	F. H. Woodruff & Sons	Tucker Hardware Co., Warren	Early Scarlet Globe Special	12	11% long top—1% pink
43	F. H. Woodruff & Sons	Walsham Hardware Co., Taunton	Woodruff's Beauty	9	9% long top
S. 267	F. H. Woodruff & Sons	Worcester State Hospital	Early Scarlet Globe	10	5% long top—5% intermediate top
789	S. D. Woodruff & Sons	Askeland Hardware Co., Ashland	Early Scarlet Globe	26	14% all shapes—12% pink

Table 4. Field Tests of Vegetable Seeds—Continued.

SQUASH

Nineteen samples of Butternut and six samples of Des Moines squash representing 13 wholesalers and 21 retailers, were planted on May 27. The lots were planted in hills, two hills to a sample, with the two hills duplicated at random in the field. Each hill was thinned to contain four plants, and the hills were spaced six feet apart. It is realized that not too many plants were used in obtaining the records below. However, it is felt that with the random selection of the seed for each of the four hills planted, the random and early thinning of the hills, and the performance of each hill duplicating each other, it would indicate the type and desirability of that sample of squash. It cannot readily be said that Butternut squash is a certain percent off-type. Instead, the trials were designed to inspect the squash according to its desirability to the generally accepted type. The accepted type of Butternut squash is squash with a straight, thick neck; 2 to 4 pounds in weight; $6\frac{1}{2}$ to 9 inches in length; creamy yellow in color, absence of cracking; and the bulbous or basal area slightly larger than the thickened neck.

BUTTERNUT SQUASH

Lab. No.	Wholesaler	Retailer	Crook-neck %	Long-neck %	Blocks	Avg. Length Inches 40 Largest Squash	Avg. Weight Lbs. 40 Largest Squash	Remarks
791	Associated Seed Growers	Pierce Hardware Co., Taunton	37.6	62.4	0.0	10.1	3.1	Unsatisfactory
164	Joseph Breck & Sons	Joseph Breck & Sons, Boston	1.6	32.0	66.4	8.0	3.2	Strain of long necks; but excess of crookneck type
911	W. Atlee Burpee Co.	Checkerboard Feed Store, E. Longmeadow	3.0	13.6	83.4	7.8	2.8	A strain of straight-sided blocks and dumb-bells
58	Comstock-Ferre & Co.	City Pet Shop, Fall River	4.0	17.3	78.7	7.8	2.8	Satisfactory
223	Comstock-Ferre & Co.	Flynn's Hardware Co., Attleboro	8.5	2.1	89.4	7.3	2.7	Satisfactory
1246	Arthur R. Cone	Wallace Grain Co., Clinton	10.0	15.5	74.5	7.6	2.7	Satisfactory
1146	Crosman Seed Corp.	Beacon Grain Co., Fall River	21.0	27.5	51.5	8.4	3.3	Unsatisfactory
1288	Eastern States Farmers Exch.	Eastern States Farmers Exch. Waltham	0.0	0.0	100.0	7.7	3.0	Satisfactory

Table 4. Field Tests of Vegetable Seeds—Continued.

BUTTERNUT SQUASH

Lab. No.	Wholesaler	Retailer	Crotch-neck inches	Long-neck inches	Blocks %	Av. Length Inches		Av. Weight Lbs.		Remarks
						40	Largest Squash	40	Largest Squash	
687	Joseph Harris Co.	Louis Constantine, Dighton	6.2	0.0	93.8	6.8	6.8	2.2		Satisfactory
682	Joseph Harris Co.	Antone Silva, Swansea	3.1	7.2	89.7	7.4	7.4	2.6		Satisfactory
201	Chas. C. Hart Seed Co.	Conlon & Donnelly Co., Attleboro	0.0	17.7	82.3	6.9	6.9	2.8		Satisfactory
650	The Page Seed Co.	J. H. Fairbanks Co., Bridgewater	2.5	26.6	70.9	8.1	8.1	2.6		Satisfactory
1296	The Page Seed Co.	Halley's Grain Store, Palmer	8.3	50.6	41.1	9.2	9.2	3.1		Unsatisfactory
707	Ross Bros. Co.	Ross Bros. Co., Ware	0.0	4.5	95.5	7.8	7.8	3.2		Satisfactory
685	Tri-State Seed Co.	Joseph Miguel, Dighton	0.0	0.0	100.0	7.0	7.0	2.6		Satisfactory
76	F. H. Woodruff & Sons	Oscar's Hardware Co., Seekonk	10.1	9.0	80.9	7.3	7.3	2.8		Satisfactory
S-293	F. H. Woodruff & Sons	Medfield State Hospital, Medfield	0.0	0.0	100.0	6.8	6.8	2.1		Satisfactory
42	F. H. Woodruff & Sons	Waldron Hardware Co., Taunton	6.5	2.3	91.2	7.4	7.4	2.6		Satisfactory
S-247	F. H. Woodruff & Sons	Wrentham State Hospital, Wrentham	0.0	9.0	91.0	7.2	7.2	2.2		Satisfactory

Table 4. Field Tests of Vegetable Seeds—Concluded.

DES MOINES SQUASH

Lab. No.	Wholesaler	Retailer	Variety	Av. Length Inches	Av. Diameter Inches	Av. Weight Lbs.	Ribbing	Remarks
176	Joseph Breck & Sons	Joseph Breck & Sons, Boston	Des Moines	6.43	4.75	2.45	50%; Deep 50%; Medium	Appears to be two types. A long deep ribbed type and a round pumpkin type
1247	Arthur R. Cone	Wallace Grain Co., Clinton	Table Queen	5.32	3.90	1.55	70%; Deep 30%; Medium	Poor sample—80% light yellow-green mottled
825	Eastern States Farmers Exch.	Eastern States Farmers Exch. Northampton	Royal Des Moines	7.10	4.93	2.74	Deep	Satisfactory
14	Joseph Harris Co.	Joseph Harris Co., Lexington	Royal Acorn	5.75	4.65	1.75	Deep	Appears to be the regular Acorn not the Royal Acorn
708	Ross Bros. Co.	Ross Bros. Co. Worcester	Des Moines	6.92	5.06	2.61	Deep	Satisfactory
827	F. H. Woodruff & Sons	Skibiski Hdw. & Supply Co., So. Deerfield	Table Queen	5.42	4.54	1.90	Medium	Satisfactory

STUDIES OF FLOWER SEEDS

Conducted by the Seed Laboratory
Waldo C. Lincoln, Jr., (Res.) Instructor
Paul Korpita, Laboratory Assistant

This is the nineteenth year in which flower seed studies have been conducted by the Seed Laboratory to determine the quality of flower seed offered for sale in various retail outlets. Seed of 422 lots, representing 57 genera packeted by 24 wholesalers or distributors, were obtained from 143 retail sources by the Seed Inspector. All samples but one, an annual flower garden mixture, were given germination tests in the laboratory, but 25 were not tested in the field. Of those not tested in the field, eight were perennials, three biennials, one Kudza Vine, seven Ipomeas, and six Lathyrus.

The lots field-tested were distributed among the various genera as follows:

Ageratum.....	5	Dahlia.....	2	Mathiola.....	1
Althea.....	1	Delphinium.....	10	Mirabilis.....	2
Alyssum.....	12	Dianthus.....	1	Nemophila.....	1
Anchusa.....	3	Didiscus.....	1	Nicotiana.....	3
Antirrhinum.....	5	Dimorphotheca.....	1	Nigella.....	1
Arctotis.....	1	Eschscholtzia.....	8	Papaver.....	9
Brachycome.....	1	Euphorbia marginata.....	2	Petunia.....	14
Cacalia.....	1	Gaillardia.....	7	Phlox.....	3
Calendula.....	16	Gilia.....	1	Portulaca.....	10
Calliopsis.....	1	Godetia.....	3	Reseda.....	4
Callistephus.....	32	Gypsophila.....	3	Salpiglossis.....	2
Celosia.....	2	Helianthus.....	7	Salvia.....	2
Centaurea Cyanus.....	21	Helichrysum.....	3	Schizanthus.....	1
Centaurea gymnocarpa.....	1	Hunnemannia.....	2	Scabiosa.....	8
Centaurea moschata.....	1	Iberis.....	5	Tagetes.....	48
Chrysanthemum.....	2	Impatiens.....	3	Tithonia.....	3
Clarkia.....	1	Kochia.....	2	Tropaeolum.....	32
Cleome.....	1	Linaria.....	1	Verbena.....	4
Cosmos.....	7	Lupinus.....	1	Zinnia.....	67
Cynoglossum.....	2	Martynia.....	1		

Dates of sowing were June 2 and 3. Seeds were sown in 15-foot sections in the row with the exception of Alyssum, Iberis, Portulaca, Phlox, Petunia, Reseda, and Scabiosa, which were sown in 10-foot sections. In most cases, the quantity of seed was sufficient to plant the desired section. The Zinnias were planted on July 1 in 20-foot sections following the testing of the radishes in the vegetable field trials.

Germination tests were made in the laboratory for all samples of seed except for one flower seed mixture. The results of the laboratory germination are listed in Table 5 for samples that are considered worthless for sale or for samples with a good germination test but found otherwise unsatisfactory in the field. A sample was considered worthless for sale if it germinated 50 percent or less of the tentative "standards" of flower seed. Laboratory tests found 3.8 percent of the total 422 lots tested as worthless and 22.6 percent as below the tentative "standards."

The weather during the critical germination period was fair to good, and growing conditions were good throughout the first three-quarters of the season. The last of the summer was unduly wet and cloudy, followed by high winds early in September, but we were able to obtain all necessary records. The following table lists only those samples that were found in the field test that differed in performance from that stated on the seed packet.

Table 5. Flower Seed Inspection

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected and Variety of Seed	Laboratory Germination %	Field Tests Performance
Joseph Breck & Sons, Inc., Boston, Mass.				
471	Zinnia	Belmont Hardware Co., Belmont Fantasy Mixed.....	94	8% not Fantasy type
192	Zinnia	Joseph Breck & Sons, Inc., Boston Giant Dahlia Flowered Mixed.....	91	Poor mixture; 50% Red
453	Papaver	Clarendon Hill Hardware Co., Somerville Superb, Double Mixed.....	94	10% single
351	Calendula	Milford Hardware Co., Milford Persimmon Beauty.....	84	8% Yellow
W. Atlee Burpe Co., Philadelphia, Pa.				
590	Chrysanthemum	Clinton Hardware Co., Clinton Coronarium, Double Mixed.....	62	8% single
565	Gaillardia	D. J. Mahoney, Bradford Double Mixed.....	61	Poor mixture; 90% Yellow with Red throat
480	Gaillardia	Needham Hardware Co., Needham Double Mixed.....	51	Poor mixture; 90% Yellow with Red throat
375	Helianthus	Frank Cardoza, New Bedford Sunflower.....	90	Packet states only "Sunflower." Packet is illustrated with the mammoth type. Found to be mammoth type.
Crosman Seed Corp., Rochester, N. Y.				
1496	impatiens	J. A. Tepper Co., Northampton Mixed Colors.....	96	Poor mixture; 80% two colors—Pink and Red
Deerington Zinnia Gardens, Bargersville, Ind.				
370	Zinnia	J. J. Newberry Stores, Bridgewater Baby-Bee Small Red.....	67	14% single. Found Orange, Pink, deep Pink and three shades of Red
369	Zinnia	Royal Golden Orange.....	28	6% Pompon type
Ferry Morse Seed Co., Detroit, Mich.				
1472	Portulaca	O. M. Gulow & Co., Turners Falls Moss Rose Double Mixed.....	92	15% single
536	Zinnia	Winter Hardware Co., Beverly Indian Summer Mixed Giants.....	60	Poor mixture; 75% Red
Joseph Harris Co., Rochester, N. Y.				
17	Calendula	Joseph Harris Co., Lexington Pacific Beauty, Persimmon Orange..	90	6% Yellow
Chas C. Hart Seed Co., Wethersfield, Conn.				
1447	Eschscholtzia	Granby Supply Co., Granby California Poppy, Mixed.....	88	Poor mixture; heavy predominance of Orange-Yellow type
1446	Zinnia	Giant Mixed.....	83	Poor mixture; 50% Rose shades
379	Alyssum	M. P. Hayes Co., New Bedford Violet Queen.....	33	Mislabeled. Found to be Royal Carpet
1431	Ageratum	Kos Hardware & Grain Co., Chicopee Blue Perfection.....	19	Satisfactory
1428	Alyssum	Royal Carpet.....	38	Satisfactory

Table 5. Flower Seed Inspection—Continued.

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected and Variety of Seed	Laboratory Germination %	Field Tests Performance
Chas. C. Hart Seed Co.,—Continued				
474	Lupinus	Moore & Moore Co., Newton Hartwegii Mixed.....	69	Annual type, but did not flower
587	Tropaeolum	Pilgrim Tire & Supply Co., Clinton Golden Gleam.....	33	Satisfactory
586	Zinnia	Lilliput, Orange.....	79	2% Yellow; 2% White; 2% Red
411	Calendula	Romano Hardware Co., Revere Orange King.....	21	Satisfactory
483	Iberis	Town Paint & Supply Co., Natick Dwarf Hybrid Mixed.....	94	Poor Mixture; 66% light or dark Violet
439	Calendula	Waverly Hardware Co., Lexington Orange King.....	30	50% Orange King; 50% a mixture of four colors
Budd D. Hawkins, Reading, Vt.				
1463	Calendula	A. E. Stewart Estate, Athol Orange King.....	27	75% Yellow, with and without dark center
Hygrade Seed Co., Fredonia, N. Y.				
229	Alyssum	Millis Consolidated Schools, Millis Violet Queen.....	24	Satisfactory
227	Portulaca	Double & Single Mixed.....	67	Color mixture good, but 80% single
Mandeville & King Co., Rochester, N.Y.				
397	Papaver	Dickson Bros. Co., Cambridge Rose Pink.....	73	4% Orange; 2% White; 2% Deep Red; 2% American Legion type
484	Papaver	Fiske Hardware Co., Natick Double Pink Rose.....	67	4% double Orange
1423	Portulaca	Frank's Hardware Co., Chicopee Single and Double.....	74	Poor Mixture; 90% single
1434	Dahlia	B. D. Rackcliffe Hardware Co., Springfield All colors Dwarf.....	63	Poor Color Mixture; 60% Orange
553	Callistephus	Wyman's Garden Spot, Framingham Pom Pom Mixed.....	29	Too few plants for a performance test
Northrup, King & Co., Minneapolis Minn.				
435	Calendula	Charles Paint & Supply Co., Woburn Double Mixed.....	53	Six types or colors but a predominance of Orange
308	Papaver	F. W. Woolworth & Co., Worcester American Legion Shirley.....	67	10% off-type
The Page Seed Co., Greene, N. Y.				
560	Zinnia	Charles River Hardware Co., Wayland Peppermint Stick.....	91	90% do not show striping characteristic of Peppermint Stick
Randolph Seed Co., Randolph, N.Y.				
1170	Kochia	Berkshire Feed & Farmers Supply, Pittsfield Burning Bush.....	4	Did not germinate in the field.
1168	Mirabilis	Marvel of Peru.....	0	Only one seed germinated in the field
1167	Papaver	American Legion.....	75	2% double; 2% White
1166	Scabiosa	Mourning Bride Mixed.....	12	Did not germinate in the field

Table 5. Flower Seed Inspection—Concluded.

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected and Variety of Seed	Laboratory Germination %	Field Tests Performance
		J. B. Rice, Jr., Shushan, N. Y.		
1470	Tropaeolum	E. M. Gulow & Sons, Turners Falls Double Golden Gleam.....	3	Did not germinate in the field
1461	Tropaeolum	Highland Hardware Co., Athol Double Golden Gleam.....	18	Did not germinate in the field
		Rice Branch, Associated Seed Co., Cambridge, N. Y.		
457	Eschscholtzia	Cunningham Hardware Co., Cambridge Extra Golden.....	79	5% Yellow; 3% Red; 2% White
		S. D. Woodruff & Sons, Inc., Orange, Conn.		
557	Ageratum	Town Line Hardware Co., Sudbury Blue Perfection.....	32	Satisfactory

Table 6. Summary, by Wholesalers, of the Performance of Flower Seeds in the Field

Seeds Packeted by	Total No. Samples Tested	No. Samples Satisfactory	No. Samples Unsatisfactory
Associated Seed Growers, Inc., Cambridge, N. Y.	3	3	0
Breck, Joseph, & Sons..... Boston, Mass.	52	48	4
Burpee, W. Atlee, Co..... Philadelphia, Pa.	25	22	3
Cardoza, Frank,..... New Bedford	1	0	1
Comstock, Ferry & Co..... Wethersfield, Conn.	1	1	0
Crosman Seed Corp..... Rochester, N. Y.	22	21	1
Deerington Zinnia Gardens..... Bargersville, Ind.	2	0	2
Ferry-Morse Seed Co. Wethersfield, Conn.	56	54	2
Fredonia Seed Co..... Fredonia, N. Y.	4	4	0
Harris, Joseph, Co..... Rochester, N. Y.	4	3	1
Hart, Charles C., Seed Co..... Wethersfield, Conn.	39	28	11
Hawkins, Budd D..... Reading, Vt.	5	4	1
Hygrade Seed Co..... Fredonia, N. Y.	6	4	2
Mandeville & King Co..... Rochester, N. Y.	65	60	5
Northrup, King & Co..... Minneapolis, Minn.	34	32	2
The Page Seed Co..... Greene, N. Y.	12	11	1
Randolph Seed Co..... Randolph, N. Y.	5	1	4
Rice Branch, Associated Seed Growers.. Cambridge, N. Y.	14	13	1
Rice, Jerome B..... Cambridge, N. Y.	16	16	0
Rice, J. B., Jr., Co..... Shushan, N. Y.	4	2	2
Ross Bros. Co..... Worcester, Mass.	16	16	0
Sears, Roebuck & Co..... Chicago, Ill.	13	13	0
Vaughan's Seed Store..... New York, N. Y.	2	2	0
Woodruff, S. D. & Sons..... Orange, Conn.	21	19	2
	422	377	45

Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Abbott & Cobb Co..... Philadelphia, Pa.	4	4	0						
Associated Seed Growers, Inc..... Cambridge, N. Y.	40	39	1	2	0	2	3	1	2
Barbour, M. L., & Sons..... Yarmouth, Me.	1	1	0						
Belt Seed Co..... Baltimore, Md.				15	13	2			
Boston Market Gardener's Assoc... Boston, Mass.	2	2	0						
Breck, Joseph, & Sons..... Boston, Mass.	40	39	1	1	1	0			
Burpee, W. Atlee, Co..... Philadelphia, Pa.	40	37	3						
Comstock, Ferre & Co..... Wethersfield, Conn.	44	43	1	3	3	0			
Cone, Arthur R., Inc..... Buffalo, N. Y.	7	6	1	24	22	2	2	1	1
Crosman Seed Corp..... Rochester, N. Y.	29	29	0						
Delta Sales Co..... Philadelphia, Pa.				1	1	0			
Dickinson, Albert, Co..... Chicago, Ill.							1	1	0
Eastern States Farmers' Exchange. West Springfield, Mass.	48	48	0	7	7	0			
Eberle, Frederick W..... Albany, N. Y.	9	9	0						
Edgewood Farms, Inc..... Maryville, Ohio							2	1	1
Ferry-Morse Seed Co..... Wethersfield, Conn.	16	16	0						
Forbes, Alexander, Co..... Newark, N. J.	7	7	0						
Fredonia Seed Co..... Fredonia, N. Y.	18	18	0						
Garden State Seed Co..... Irvington, N. J.							1	0	1
Grey, Thomas J., Co..... No. Abington, Mass.	3	3	0						
Harris, Joseph, Co..... Rochester, N. Y.	26	26	0						
Hart, Charles C., Seed Co..... Wethersfield, Conn.	52	52	0						
Hawkins, Budd D..... Reading, Vt.	16	15	1				1	0	1

Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory —Continued

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Hygrade Seed Co..... Fredonia, N. Y.	7	7	0						
Landreth, D. Seed Co..... Philadelphia, Pa.	20	16	4						
Lee, Patten Co..... Jersey City, N. J.							1	1	0
Lyon, John D., Inc..... Cambridge, Mass.				4	3	1	14	0	14
Mandeville & King Co..... Rochester, N. Y.	12	10	2						
Michael Leonard Seed Co..... Chicago, Ill.	6	6	0						
Northern Seed Co..... Providence, R. I.				1	1	0			
Northrup, King & Co..... Minneapolis, Minn.	14	14	0	1	1	0			
The Page Seed Co..... Greene, N. Y.	33	30	3	15	12	3			
Park & Pollard Co..... Buffalo, N. Y.				1	1	0			
Pedigreed Seed Co..... New York City, N. Y.							2	1	1
Pelletized Seed Co..... Wynnewood, Pa.	3	2	1						
Philadelphia Seed Co..... Philadelphia, Pa.				8	3	5	3	0	3
Randolph Seed Co..... Randolph, N. Y.	11	7	4						
Reddi-Mix Co..... Everett, Mass.							3	0	3
Rice, Jerome B. Seed Co..... Cambridge, N. Y.	13	13	0						
Rice, J. B. Jr., Inc..... Shushan, N. Y.	7	7	0						
Ross Bros. Co..... Worcester, Mass.	23	23	0				1	0	1
Rowe, Charles H..... Philadelphia, Pa.	6	6	0						
Scarlett, Wm. G. & Sons..... Baltimore, Md.				23	20	3	1	0	1
Scott, O. M. & Co..... Marysville, Ohio				1	1	0			
Sordillo, Joseph, & Sons..... Boston, Mass.	10	8	2						
Stanford Seed Co..... Buffalo, N. Y.				17	14	3	3	1	2

Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory—Concluded.

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Tri-State Seed Co..... Philadelphia, Pa.	8	8	0	.....	.....	.....	.....	.....	.....
Vaughan's Seed Store..... New York City, N. Y.	11	11	0	.....	.....	.....	.....	.....	.....
Viscoid Products..... Baltimore, Md.	.....	.....	.....	.....	.....	.....	1	1	0
Whitney Seed Co..... Buffalo, N. Y.	.....	.....	.....	4	3	1	2	1	1
Woodruff, F. H., & Sons..... Milford, Conn.	119	116	3	.....	.....	.....	.....	.....	.....
Woodruff, S. D., & Sons..... Orange, Conn.	24	24	0	2	2	0	.....	.....	.....
	729	702	27	130	107	23	41	14	32

Inspection of Commercial Feedstuffs

BY

Feed Control Service Staff

Massachusetts Agricultural Experiment Station

— Apr. 30, 1956 —



INSPECTION OF COMMERCIAL FEEDSTUFFS

By Feed Control Service Staff

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INTRODUCTION

Year by year the manufacture of feed and consequently the problem of feed control become more complicated. In this bulletin, analytical results for fourteen drugs, five vitamins, and six minerals are reported. With the appearance of new drugs including the actual use of one hormone and the contemplated use of another in feeds, the list in the next bulletin will be even longer.

Although analysis of feeds for these newer factors is very important, protein, fat and fiber determinations as well as microscopic examination are still necessary and cannot be neglected.

One of the major feed control problems this year has been the influx of mislabelled oat products from Canada. At least five Canadian firms were responsible for the shipment of these products labelled as ground oats.

The lowest protein content found in these products was 7.2 percent. The highest fiber content was 22.1 percent. Microscopic examination showed that the products came under the definition for grain and mixed screenings. The products appeared to be synthetic mixtures of oats, wheat, barley and oat hulls.

To explain the findings of the Control Service, one of the shippers advanced an explanation that would have strained the gullibility of even a tyro in the feed business. He stated that the presence of wheat and barley in the mislabelled products was due to the field appearance of these grains in the oat crop and insisted that the products shipped consisted of the oat crop as harvested. Since wheat and barley are much lower in fiber than oats, it is impossible to explain how their presence in oats, without the addition of oat hulls, can raise the fiber content of the mixture far above the fiber content of oats.

Despite protestations to the contrary, the Massachusetts brokers and manufacturers were not all blameless in the matter. In most cases, there was a considerable price differential between the Canadian ground products and good grades of whole oats. It is reported that some Massachusetts manufacturers ordered so-called "mulligan" ground oats.

Because neither the Federal Food and Drug Administration nor the Massachusetts Feed Control Service can prosecute the Canadian shippers, the Massachusetts brokers and/or manufacturers were held responsible for the proper registration and labelling of these products. In the future, more attention will be given to such violations of the Massachusetts Feed Law. At a time when the United States Department of Agriculture is faced with a surplus of grains, the sale of mislabelled low grade Canadian grain products cannot be tolerated.

Brands Substantially Complying with Guarantees

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Acme-Evans Co., Inc.		Beacon "16".....	1
Acme Hominy.....	1	Beacon Balancer Pellets.....	1
L. P. Adams Co.		Beacon Breeder All-Mash.....	1
Greylock Brand 16% Dairy Feed....	2	Beacon Calf Grain.....	1
Greylock Brand Laying Mash.....	2	Beacon Calf Starter.....	1
Albers Milling Co.		Beacon Dairy Fitting.....	1
Albers Rabbit Family Ration.....	1	Beacon "22" Egg Mash.....	1
Allied Mills, Inc.		Beacon Goat Ration.....	1
Sugarine 16% Dairy Feed.....	1	Beacon "18" Growing Mash.....	1
Wayne Calf Starter.....	1	Beacon Market Egg All-Mash.....	1
Wayne 16% Dairy.....	1	Beacon Poultry Fitting.....	1
Wayne Dairy Mixer.....	1	Beacon Starter-Broiler Feed.....	1
Wayne Dog Food Krums.....	1	Beacon "18" Test Cow Ration.....	1
Wayne Egg Mash.....	1	Beacon Turkey & Game Bird Fitting	1
Wayne 26% Egg & Breeder.....	1	Beacon Turkey Finisher All Mash ..	1
Wayne Fattening Pellets.....	1	Beacon Turkey and Game Bird	
Wayne Fitting Ration.....	2	Grower.....	1
Wayne Horse Feed.....	2	Best Dog Food Co.	
Wayne Mash Layer.....	1	Vita-Best Kibbled Biscuits.....	1
Wayne Pork Maker.....	1	Blatchford Calf Meal Co.	
Wayne Rabbit Ration.....	1	Blatchford's Calf Meal.....	1
Wayne Tail Curler.....	1	Blatchford's Calfadine.....	1
Wayne Test Cow Ration.....	1	Borden Grain Co.	
Wayne Universal Egg.....	2	Borden's 14 Fitting.....	2
Wayne Universal Grower.....	2	Borden's Growing Feed.....	2
American Crystal Sugar Co.		Borden's Laying Mash.....	2
Molasses Dried Beet Pulp.....	1	Borden's Super Mash.....	2
Plain Dried Beet Pulp.....	1	Borden's Super Starter and Broiler	
Animal Foundation, Inc.		Feed.....	2
Hunt Club Full Diet Dog Meal.....	1	Borden's Sweet 16 Dairy.....	2
Arcady Farms Milling Co.		George B. Brown Corp.	
Rockland Rabbit Ration.....	1	Complete Grower.....	1
Wonderfat Station Feed.....	1	Complete Layer.....	1
Archer-Daniels-Midland Co.		Brown's Dairy Feed.....	1
Archer-Quality 36% Protein		Brown's Egg Mash.....	1
Linseed Oil Meal.....	1	Brown's Fitting Ration.....	1
Archer Quality 34% Protein		Brown's Growing Mash.....	1
Linseed Oil Meal.....	1	Brown's Pig Feed.....	1
Archer Quality 44% Protein		Buckeye Sugars, Inc.	
Solvent Extracted Soybean		Dried Beet Pulp.....	1
Oil Meal.....	1	Cal-Cod Process Co.	
E. W. Bailey & Co., Inc.		Cal-Cod Dog Food.....	1
Pennant Brand Complete Egg Ration	1	Cargill, Inc.	
Pennant Brand 20% Dairy Ration..	1	44% Protein Soybean Oil Meal....	1
Pennant Brand 16% Dairy Ration..	1	Clinton Foods, Inc., Florida Products Div.	
Pennant Brand Fitting Ration.....	1	McDonald Brand Dried Citrus Pulp	1
Pennant Brand Horse Feed.....	1	Clyde Milling Corp.	
Pennant Brand Laying Mash.....	3	Dried Apple Pomace.....	1
Pennant Brand Pig Feed.....	1	Clyde Complete Breeder Mash.....	1
Barber & Bennett, Inc.		Clyde Complete Calf Starter.....	1
Fort Orange Dog Food.....	1	Clyde 16 Dairy Ration.....	1
Fort Orange 12% Fitting and Calf		Clyde Dry and Freshening Ration ..	1
Grain Ration.....	1	Clyde Horse Feed.....	1
Fort Orange Golden Test Ration....	1	Clyde Market Egg Mash.....	1
Fort Orange Laying Mash.....	1	Clyde Milky-Las 15 Dairy Ration ..	1
Battle Creek Dog Food Co.		Clyde Rabbit Pellets.....	1
Miller's Dog Meal.....	1	Clyde Super Egg Mash.....	1
Miller's Kibbles Dog Food.....	1	Clyde Test Cow 16.....	1
Beacon Milling Co., Inc.		C-M-C 16 Dairy Ration.....	1
Auburn "20".....	1	New England 20 Dairy Ration.....	1
Auburn "16".....	1	New England 16 Dairy Ration.....	1
		Ru-Bac Dairy Conditioning Pellets ..	1

Brands Substantially Complying with Guarantees (Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Coatsworth & Cooper, Ltd.		Wirthmore Turkey Growing Ration.	1
C and C Wheat Bran.....	1	Wirthmore Turkey Starter Ration...	1
Community Service, Inc.		Wirthmore Twin-Mix Calf Ration....	1
Community Complete Pig Feed.....	1	Crawford Brothers, Inc.	
Community 18% Dairy Ration.....	1	Crawford Calf Starter Ration.....	1
Community 16% Dairy Ration.....	1	Crawford Complete Chick Starter...	1
Community Fitting Ration.....	1	Crawford Complete Egg Pellets....	1
Community Laying Mash.....	1	Crawford Complete Growing Mash Pellets.....	1
Consolidated Products Co.		Crawford 20% Dairy Ration.....	1
New Kaff-A.....	2	Crawford 18% Dairy Ration.....	1
Consolidated Rendering Co.		Crawford 16% Dairy Ration.....	1
Corenco Feeding Bone Meal.....	1	Crawford 14% Dry & Freshening...	1
Corenco 47% Meat & Bone Scrap ..	1	Crawford 16% Hi-Energy Layer- Breeder Mash.....	2
Continental Distilling Corp.		Crawford Horse Feed.....	1
25% Corn Distillers Dried Grains. .	1	Crawford Laying Mash.....	1
Copeland Flour Mills, Ltd.		Crawford Rabbit Pellets.....	1
Dandy Wheat Bran.....	1	Crawford Turkey Growing Mash....	1
Corn Products Refining Co.		Crawford V. G. Fitting Ration.....	1
Buffalo Brand 21% Corn Gluten Feed	3	Dawe's Laboratories, Inc.	
Diamond Brand Corn Gluten Meal .	3	Dawe's Swine Base.....	1
Courcy & Sons Grain Co.		Dean & Lee	
Courcy's Laying Mash.....	2	Pathfinder Fitting Ration 14.....	1
Ever Grain & Feed Co.		Pilgrim Egg Producer.....	1
C & P Grade A Laying Mash.....	1	Pioneer Complete Rabbit Pellets....	1
C & P Growing Mash.....	1	Pioneer Dairy Ration 18.....	1
C & P Pig & Hog Feed.....	1	Pioneer Laying Mash.....	1
C & P Starter & Broiler Ration.....	1	Decatur Milling Co., Inc.	
Has. M. Cox Co.		Homco Hominy Feed.....	1
Wirthmore Breeder Mash.....	1	Delaware Mills, Inc.	
Wirthmore Calving Ration.....	1	Delaware Breeder Mash.....	1
Wirthmore Challenger Coarse 16 Dairy Ration.....	1	Delaware Egg Mash.....	1
Wirthmore Challenger Coarse 14 Dairy Ration.....	1	Delaware H-E Layer and Breeder...	1
Wirthmore Challenger Coarse 12 Dairy Ration.....	1	Delaware Sweet 16% Dairy Feed....	1
Wirthmore Complete Breeder Ration	1	Frank Diauto	
Wirthmore Complete Chick Starter .	1	Diauto's Special Breeder Mash.....	1
Wirthmore Complete Egg Ration....	1	Diauto's Special Egg Mash.....	1
Wirthmore Complete Growing Ration	1	F. Diehl & Son, Inc.	
Wirthmore 32 Dairy Supplement ...	1	Breeder.....	1
Wirthmore 20 Dairy Ration.....	1	18% Dairy.....	1
Wirthmore 16 Dairy Ration.....	1	14% Fitting.....	1
Wirthmore Dog Meal.....	1	Grower.....	1
Wirthmore Kibbled Dog Biscuit....	1	Layer.....	1
Wirthmore 14 Fitting Ration.....	2	Starter.....	1
Wirthmore Fattening Pellets.....	1	Dietrich & Gambrill, Inc.	
Wirthmore Fodder Greens.....	1	D & G Fleshing Mash.....	1
Wirthmore Growing Mash.....	1	D & G Pig & Sow Meal.....	1
Wirthmore Hi-Ener-G Breeder.....	1	D & G Special Broiler Mash.....	1
Wirthmore Hi-Ener-G Layer.....	1	Frederick Laying Mash.....	1
Wirthmore Hog Grower.....	2	Gambrill's Growing Mash.....	1
Wirthmore Horse Feed.....	1	Gambrill's Laying Mash.....	1
Wirthmore Laying Mash.....	1	Pen Mar Horse & Stock Feed.....	1
Wirthmore Pig & Sow Feed.....	1	John C. Dow Co.	
Wirthmore Poultry Fitting.....	1	Dow's Dog Biscuit.....	1
Wirthmore Rabbit Pellets.....	1	Dow's Crumpled Meal.....	1
Wirthmore 18 Record Ration.....	1	Dow's Crunchy Dog Food.....	1
Wirthmore 16 Record Ration.....	1	J. L. Dunnell & Son	
Wirthmore Sheep and Goat Ration .	1	Excel 18% Dairy Ration.....	2
Wirthmore Stock Feed.....	1	Excel Fitting Ration.....	2
Wirthmore Super Pellets.....	1	Excel Laying Mash.....	2
Wirthmore Turkey Fattening Ration	1	Horse Feed.....	1
		Starter and Grower—Horner's.....	2

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Eastern States Farmers' Exchange, Inc.		S-X Growing Mash.....	1
All-Mash Developer.....	1	S-X Starter and Broiler.....	1
All-Mash Producer.....	1	S-X Starter and Broiler Connec- ticut Formula.....	1
Calving Ration.....	1	Farm Bureau Association	
Calf Starter.....	1	22% Breeder Mash.....	1
Champion.....	1	Breeder Mash.....	1
Class Leader.....	1	Calf Grower.....	1
Developer.....	1	Chick Starter Mash.....	1
Dog Feed.....	1	Complete Developer Mash.....	1
Finisher.....	1	Complete Market Egg Mash.....	1
Fulpaill.....	1	Conditioner and Fleshing Mash.....	1
Milkmore.....	1	Dairy 20'.....	1
Pig Primer.....	1	16% Dairy Ration.....	1
Pork Builder.....	1	16% Dairy Ration "Coarse".....	1
Producer.....	1	Developer Mash.....	1
Rabbittes.....	1	Fitting Ration.....	1
36% Supplement.....	1	Hog Feed.....	1
Sweepstakes.....	1	Horse Feed.....	1
Turkey-Grower.....	1	Market Egg Mash.....	1
8 in 1 Pet Products, Inc.		14% Milking Ration.....	1
8 in 1 Dog Crunchies.....	1	Rabbit Food Pellets.....	1
Elmore Milling Co., Inc.		Turkey Grower.....	1
Elmore Complete Growing Ration ..	2	Farmers Feed Co.	
Elmore Complete Layer and Breeder	1	Bull Brand Brewers Dried Grains...	1
Elmore Complete Market Egg Mash	2	Farmers' Marketing & Supply Co.	
Elmore Complete Rabbit Ration		FMS-A.....	1
Pellets.....	1	Florida Citrus Cannery Cooperative ...	1
Elmore Complete Turkey Growing ..	1	Lake Wales Brand Citrus Pulp.....	1
Elmore Dog Food.....	1	Flory Milling Co., Inc.	
Elmore Dry and Freshening Ration ..	1	Flory Golden Egg Layer Mash.....	1
Elmore Egg Mash.....	2	Flory 16% Grower Mash.....	1
Elmore Fitting Ration.....	2	Flory Hi Broiler Mash.....	1
Elmore Growing Mash.....	1	Flory Hi Efficiency All Mash Layer ..	1
Elmore Hog Ration.....	1	Flory Horse Feed.....	1
Elmore Horse Feed.....	2	Flory Layer Mash.....	1
Elmore M.A.C. Laying Mash.....	2	Flory N-er-G Mash.....	1
Elmore Milk Grains "Sixteen".....	1	Flory Rabbit Pellets.....	1
Elmore Pacemaker 18% Dairy Ration	2	Flory Record 16% Dairy Feed.....	1
Elmore Pacemaker 16% Dairy Ration	2	Flory Record 14% Fitting Ration....	1
Elmore Pacemaker Fitting Ration ..	1	Flory Superior 16% Dairy Feed.....	1
Elmore Super Broiler Ration.....	1	Flory Superior 14% Fitting Ration....	1
Elmore 30% Supplemental Dairy		Fred A. Fountain	
Ration.....	1	Fountain's Breeder Mash.....	2
Elmore Test Ration 18%.....	1	Fountain's Complete Growing Pellets	1
Elmore Test Ration 16%.....	2	Fountain's Growing Mash.....	2
Elmore Turkey Finisher (Fattener) ..	1	Fountain's Laying Mash.....	2
Elmore Turkey Growing Mash.....	1	Fruit Industries	
John W. Eshelman & Sons		Tropicana's Sweetest Dried Citrus	
Pensy 16 Dairy Feed.....	1	Pulp.....	1
Pennsy Laying Mash.....	1	Nicholas Gangone	
Red Rose Breeder Mash.....	1	Nick's Dog Food.....	1
Red Rose Complete Laying Ration ..	1	General Foods Corp., Gaines Div.	
Red Rose 18 Dairy Feed.....	1	Gaines Homogenized Dog Meal.....	1
Red Rose 16 Dairy Feed.....	2	General Mills, Inc.	
Red Rose Fitting Ration.....	2	Gold Medal Complete Grower Mash ..	1
Red Rose Growing Mash.....	1	Gold Medal Complete Layer Mash....	1
Red Rose Horse Feed.....	1	Gold Medal Complete Turkey Grower ..	1
Red Rose Laying Mash.....	1	Gold Medal 20% Dairy Feed.....	1
Red Rose T. C. Feed.....	1	Gold Medal 16% Dairy Feed.....	2
Essex County Co-operative Farming		Gold Medal 14% Fitting Ration....	1
Assn.		Gold Medal Green Rabbit Pellets....	1
S-X All-Mash Breeder.....	1		
S-X All-Mash Egg.....	1		
S-X All-Mash Growing.....	1		
S-X Breeder Mash.....	1		
S-X 18% Dairy Ration.....	1		
S-X Egg Mash.....	2		
S-X-14% Fitting Ration ..	2		

INSPECTION OF COMMERCIAL FEEDSTUFFS

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Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Gold Medal 18% Grower Mash . . .	1	D. Harbeck & Sons	
Gold Medal Hi-Efficiency All Mash . .	1	Welcome Egg Mash	2
Gold Medal Hi-Efficiency Layer Mash .	1	Welcome Growing Mash	2
Gold Medal Hi-Energy Grower Mash . .	1	Welcome Starter and Broiler Mash . .	2
Gold Medal 20% Layer Mash	1		
Gold Medal Layer Mash	1	Harper Feed Mills, Inc.	
Gold Medal Sweet Feed	2	Green Pasture Dairy Fitting Ration . .	1
Gold Medal Turkey Fattener-Finisher Mash	1	Harco Dairy Fitting Ration	1
Gold Medal Turkey Grower Mash . . .	1	Harco 16% Dairy Ration	1
Vigor Dog Food	1	Harco Fattening Mash Station Feed . .	1
Washburn's Gold Medal Wheat		Harco Hi-Energy Complete Growing Ration	1
Adrian Red Dog	1	Harco Hi-Energy Complete Laying Ration	1
Washburn's Gold Medal Wheat Bran and Ground Wheat Screenings not exceeding mill run	1	Harco Laying Mash	1
Washburn's Gold Medal Wheat Standard Middlings and Ground Wheat Screenings not exceeding mill run	1	Top Profit Laying Mash	1
		Top Profit Range Growing Mash . . .	1
General Mills, Inc., Larowe Region		Hartz Mountain Products Corp.	
Larro Surelay Hi Energy	1	Dog Yummies Candy for Dogs	1
Larro Suremilk 20	1		
Larro Suremilk 16	1	Hi-Life Packing Co.	
Larro Surepork 35	1	Daily Kibbled Biscuit	1
Larro Surepork Complete	1		
Gloucester By-Products, Inc.		H. P. Hood & Sons, Inc.	
Globpro Brand Fish Meal	1	Hood Calf Starter	1
Goldenrod Oil Meal Sales Co.			
Golden Rod Brand 41% Protein Cottonseed Meal	2	E. C. & W. L. Hopkins, Inc.	
Gorton-Pew Fisheries Co., Ltd.		Granite State Complete Mash	1
Gorton's Redfish Meal	1	Granite State 16% Dairy Feed	1
		Granite State Dog Food	1
H. Grandin Milling Co.		Granite State Stock Feed	1
Grandin's Dry & Freshening Ration . .	1		
Grandin's 14 Fitting Ration	1	International Milling Co.	
Grandin's Happy Calf Milk Replacer . .	1	Blackhawk Wheat Bran with Ground Mixed Screenings not exceeding 8%	2
Grandin's Hi-Nutro Mash	1	Blackhawk Wheat Standard Middlings with Ground Mixed Screenings not exceeding mill run	1
Grandin's Horse Feed	1	Target Wheat Red Dog	1
Grandin's 20 Milk Maker	1		
Grandin's Pig and Sow Feed	1	Jaquith & Co.	
Grandin's Start-to-Finish Mash	1	Jaquith 16% Complete Layer Mash . . .	1
Grandin's Super Starter & Broiler Ration	1	Jaquith Growing Mash	1
Grandin's 18 Test Ration	2	Jaquith 20% Laying Mash	1
Grandin's 16 Test Ration	2	Jaquith Laying Mash	1
Grandin's Twin Six Dairy Feed	1		
Great Atlantic & Pacific Tea Co.		Kasco Mills, Inc.	
Daily Dog Meal	1	Kasco All Mash Grower Ration	1
Daily-Growth Chick Starter	1	Kasco All Mash Layer Ration	1
Daily-Growth Growing Mash	1	Kasco Beatsall Milk Grains 16%	1
		Kasco Body Builder	1
Graves & Hunter Co.		Kasco Complete Dog Ration	1
Pioneer Bull Feed	1	Kasco 18% Dairy Feed	1
Pioneer Calf Starter	1	Kasco Egg Producer	1
Pioneer 32 Dairy	1	Kasco Fitting Ration	1
Pioneer 18 Dairy	2	Kasco Gro-Calf	1
Pioneer Dairy Fitting Feed	1	Kasco Hog Hussler	1
Pioneer Pelleted Flaked Dairy Goat Feed	1	Kasco Horse Feed	1
Pioneer Dry & Freshening	1	Kasco Pig Zip	1
Pioneer Rabbit Pellets	1	Kasco Sweet 16% Dairy Feed	1
Red Comb All Mash Layer	1		
Red Comb Broiler Finisher	1	Kellogg Co.	
Red Comb Chick Starter	1	Gro-Pup Ribbon	1
Red Comb Egg Mash	1	Kellogg's Hominy Feed	1
Red Comb Turkey Finisher	1		
Red Comb Turkey Grower	1	Kennel Food Supply Co., Inc.	
Red Comb Turkey Starter	1	Fairfield Dog Meal	1
		KFS Biscuits	1
		KFS Cero-Meato Brand Dog Food . . .	2
		Kronick's Coal & Grain Co.	
		Kronick's Dairy Ration 16%	1
		Kronick's Egg Mash	1
		Kronick's Starter-Grower Mash	1

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Kuder Pulp Sales Co.		Methuen Grain Co.	
Kuder Citrus Pulp.....	1	Umpire All-Mash Grower.....	1
Kuder Dried Citrus Pulp High Sugar	1	Minute Maid Corporation	
Lauhoff Soya Co.		Golden Isle Citrus Pulp.....	1
44% Protein Solvent Extracted		Geo. Q. Moon & Co., Inc.	
Soybean Oil Meal.....	1	Moon Complete Growing Mash.....	2
Libner Grain Co.		Moon Complete Laying Mash.....	2
Libner's Dog Food.....	1	Moon 20% Dairy Ration.....	2
L. B. Lovitt & Co.		Moon 18% Dairy Ration.....	1
Lovitt Brand 41% Protein Cottonseed		Moon 16% Dairy Ration.....	2
Meal.....	3	Moon Dairy Fitting Ration.....	1
McMillen Feed Mills		Moon Growing Mash.....	1
Master Blend Dairy Concentrate...	1	Moon Hog Feed.....	3
Master Mix Breeder Concentrate...	1	Moon Horse Feed.....	1
Master Mix Broiler Finishing Pellets	1	Moon Laying Mash.....	1
Master Mix Chick Concentrate.....	1	Moon N. E. Complete Growing Mash	1
Master Mix Dogburger.....	2	Moon N. E. Complete Laying Mash	2
Master Mix Egg-lac Pellets.....	1	Moon N. E. 20% Laying Mash.....	1
Master Mix Layer Concentrate.....	1	Moon 14% Pasture Aid.....	1
Master Mix Pig Concentrate.....	1	Moon Rabbit Pellets.....	3
Master Mix Pig-Ets.....	1	Moon Super Broiler Finishing Ration	1
Master Mix Turkey Concentrate....	1	Moon 18% Test Ration.....	1
Master Mix Waylac.....	1	Moon 16% Test Ration.....	2
Mansfield Milling Co.		Jas. F. Morse & Co.	
Full Cry Dog Meal.....	1	Morse's 50% Meat & Bone Scraps..	1
Money's Worth Complete Growing..	1	Morse's 45% Meat & Bone Scraps..	1
Money's Worth Complete Mash.....	3	Mowat, Wilson & Co.	
Money's Worth Dairy Feed 20%.....	1	Dried Beet Pulp.....	1
Money's Worth Dairy Feed 16%.....	3	Nappanee Milling Co., Inc.	
Money's Worth Fitting Ration.....	2	Hominy Feed.....	2
Money's Worth Growing Mash.....	2	National Biscuit Co.	
Money's Worth High Efficiency		Pal Tiny-Bits.....	1
Complete Growing.....	1	Ogden Grain Co.	
Money's Worth High Efficiency		Ogden All Grain Green Pasture Ration	1
Complete Mash.....	2	Ogden "Biddy" Mash.....	1
Money's Worth High Efficiency Starter	3	Ogden Complete Grower.....	1
Money's Worth Laying Mash.....	3	Ogden Complete Starter Grower	
Money's Worth Rabbit Pellets.....	1	Layer Breeder.....	1
Maple Leaf Milling Co., Ltd.		Ogden 16% Dairy Feed.....	1
Rex Wheat Bran with Screenings		Ogden Growing Mash.....	1
not exceeding mill run.....	1	Ogden Laying Mash.....	1
Maritime Milling Co., Inc.		Ogden Poultry and Turkey Fitting	
B-B "16" Dairy Ration.....	1	Ration.....	1
B-B Dry and Fresh Cow Fitting		*Ogden Rabbit Pellets.....	1
Ration.....	2	Ogden 14% S-M-R Ration.....	1
B-B Fitting Ration.....	2	Ogilvie Flour Mills Co., Ltd.	
B-B 18% Special Dairy Ration.....	1	Ogilvie Wheat Bran.....	1
B-B Ma-Co Complete Growing Ration		Old Mother Hubbard Dog Food Co., Inc.	
B-B Ma-Co Complete Laying Ration	2	Old Mother Hubbard Kibbled Dog	
B-B Ma-Co Complete Turkey Starter		Biscuits.....	1
Ration.....	1	Orleans Candy Co.	
B-B Ma-Co Conditioning Mash.....	1	Lolli-Pups.....	1
Dollar Maker Brand Egg Mash.....	1	Palm Grain Co.	
Marvin Grain Co.		Palm's Complete Mash.....	1
Marvin Dog Meal.....	1	Park & Pollard Co., Inc.	
Merrimack Farmers' Exchange, Inc.		Hi-Prime Turkey Grower.....	1
Fast-Gro Starter & Broiler.....	1	Lay or Bust All Mash Layer.....	1
Merrimack Calf Starter and Growing		Lay or Bust Breeder Mash.....	1
Ration.....	1	Lay or Bust Broiler Finishing Mash.	1
Merrimack Complete Grower.....	1	Lay or Bust Egg Mash.....	1
Merrimack 16% (Fine) Dairy Ration	1		
Merrimack 14% Fitting Ration.....	1		
Merrimack Fodder Ration.....	1		
Merrimack Hi-F Layer.....	1		

*See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees (Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Park & Pollard Co., Inc., Cont.		Purina Bulky Lay	1
Lay or Bust Growing Feed	1	Purina Chick Growers	1
Lay or Bust Hi-Power Broiler Ration	1	Purina Chicken Fatena Checkers...	1
Lay or Bust Hi-Valu Pellets	1	Purina Complete Sow & Pig Chow	1
Lay or Bust Laying Pellets	1	Purina Cow Chow Concentrate	1
Milk-Maid 20% Dairy Ration	1	Purina Cow Chow 18	1
Milk-Maid 16% Dairy Ration	1	Purina Cow Chow 16	1
Milk-Maid Dri-Fresh Ration	1	Purina Cow Chow 14	1
Milk-Maid Fitting Ration	1	Purina Cow Chow Supplement	1
Milk-Maid Goat Feed	1	Purina D & F Chow	1
Milk-Maid Test Cow Ration	1	Purina Dairy Chow 16	1
Milk-Maid 14% Test Ration	1	Purina Dog Chow Checkers	1
Munchy Dog Food	1	Purina Dog Chow Kibbled Meal	1
Park & Pollard Complete Chick		Purina Duck Growers	1
Starter	1	Purina Flock Chow	1
Park & Pollard Complete Layer	2	Purina Goat Chow	1
Park & Pollard Go-Tu-It Pig Grower	1	Purina Hog Fatena	1
Park & Pollard Laying Mash	1	Purina Laboratory Chow	1
Park & Pollard Rabbit Pellets	1	Purina Lay Chow	1
Park & Pollard Stock Feed	1	Purina Layena	1
Red Ribbon 20% Dairy Ration	1	Purina Milk Chow 16	1
Red Ribbon 18% Dairy Ration	1	Purina Mink Chow	1
Red Ribbon 16% Dairy Ration	1	Purina Omolene	1
Yankee Horse Feed	1	Purina Poultry Booster Chow	1
		Purina Rabbit Chow Checkers	1
George H. Parker Grain Co.		Purina Roaster Chow	1
Bill McHugh's Horse Feed	1	Purina Turkey Fatena	1
Parker's High A 14% Fitting Ration	1	Purina Turkey Growers	2
Parker's Laying-Breeding Mash	1		
Parrish & Heimbecker, Ltd.		John Reardon & Sons	
"Parrheim" Pure Wheat Bran	1	Register Brand Fish Meal	2
"Parrheim" Pure Wheat Shorts	1	Register Brand 45% Protein Meat and Bone Scrap	1
Pasco Packing Co.		D. F. Riley	
Sugar-Sweet Citrus Meal	1	*Riley's 16% Dairy Ration	1
Sugar-Sweet Citrus Pulp	2	Riley's 14% Fitting Ration	2
		Riley's 18% Laying Mash	2
Patent Cereals Co.		Riley's 18% Starting Mash	1
Corn Kibbles	1		
Hominy Feed	1	Russell-Miller Milling Co.	
Pillsbury Mills, Inc.		Hard Wheat Occident Bran	1
Pillsbury's 44% Protein Soybean Oil Meal	1	Hard Wheat Occident Flour Middlings	1
Pillsbury's Hard Wheat Bran with Ground Wheat Screenings not exceeding mill run	2	Hard Wheat Occident Mixed Feed containing Ground Wheat Screen- ings not exceeding mill run	1
Pillsbury's Hard Wheat Standard B. Middlings with Ground Wheat Screenings not exceeding mill run	2	Hard Wheat Occident Standard Middlings containing Ground Wheat Screenings not exceeding mill run	1
P. C. Pratt & Co., Ltd.		Ryther & Warren Co.	
Ruler Brand Pure Wheat Bran	1	Blue Tag Dairy Ration	1
Quaker Oats Co.		Sea Board Supply Co.	
Bell Cow Wheat Bran	2	Crab Meal	
Ful-O-Pep Broiler Finisher	1	Joseph E. Seagram & Sons, Inc.	
Ful-O-Pep Chick Starter	1	Seagram's Corn Distillers Dried Grains	1
Ful-O-Pep Dairy Feed	1	J. H. Smith Grain, Inc.	
Ful-O-Pep Egg Breeder Ration	1	Smith's All Mash Growing and Laying	1
Ful-O-Pep Fitting Feed	1	Southern Fruit Distributors, Inc.	
Ful-O-Pep Growing Mash	1	Bluebird Citrus Pulp	2
Ful-O-Pep Laying Mash	1	Spratt's Patent (America) Ltd.	
Ful-O-Pep Milking Feed	1	Spratt's Assorted Dog Biscuits	1
Ful-O-Pep Rabbit Ration	1	Spratt's Ovals Dog Biscuits	1
Ful-O-Pep Super Greens	1	A. E. Staley Manufacturing Co.	
Ken-L-Biskit	1	"Staley's" 21% Corn Gluten Feed	1
Ken-L-Meal	1	Staley's 44% Protein Solvent Ex- tracted Soybean Oil Meal	1
Quaker Sugared Schumacher Feed	1		
Ston Purina Co.			
Purina Breeder Layena	1		

*See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Concluded)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Sunshine Biscuits, Inc.		*Made Right Complete Layer.....	1
Austin's Dog Food.....	1	Made Right 20% Dairy.....	3
Swansea Grain Co.		Made Right 16% Dairy.....	2
Swansea Quality All Mash Grower...	1	Made Right Fitting Ration.....	3
Swansea Quality All Mash Layer....	1	Made Right Growing Feed.....	4
Swansea Quality Chick Starter.....	1	Made Right High Energy Breeder	
Swansea Quality Laying Mash.....	1	Mash.....	1
Swift & Co., Soybean Mill		Made Right High Energy Broiler...	3
Swift's Soybean Oil Meal, 44%		Made Right High Energy Grower	
Protein Solvent Extracted.....	1	Mash.....	1
Taft Bros.		Made Right High Energy Layer	
Taft Dairy Feed.....	1	Mash.....	2
Taft Laying Mash.....	1	Made Right Horse Feed.....	3
Taunton Grain Co.		Made Right Laying Mash.....	3
Balanced Ration.....	2	Made Right Pig Feed.....	1
Fitting Ration.....	2	Made Right Starter.....	1
Growing Mash.....	1	Made Right Stock Feed.....	2
Laying Mash.....	2	H. K. Webster Co.	
Topnotch Flour Mills		Blue Seal Breeder's Mash.....	1
Wheat Bran.....	1	Blue Seal Calf Starter.....	1
Wheat Shorts.....	1	Blue Seal "20" Dairy Ration Coarse	1
Union Starch & Refining Co.		Blue Seal Fine "20" Dairy Ration..	2
Union Corn Gluten Meal.....	1	Blue Seal Fine "16" Dairy Ration..	1
Unity Feeds, Inc.		Blue Seal Economizer "16" Dairy	
Unity Breeder Mash.....	1	Ration.....	1
Unity Complete Market Egg Mash..	1	Blue Seal Egg Mash.....	1
Unity 20% Dairy Ration.....	1	Blue Seal Fitting Ration.....	1
Unity 16% Dairy Ration.....	1	Blue Seal Goat Feed.....	1
Unity Dairy and Fitting Ration....	1	Blue Seal Growing Mash.....	1
Unity Growing Mash.....	1	Blue Seal Horse Feed.....	1
Unity High Energy Breeder Mash...	1	Blue Seal Pig Feed.....	1
Unity High Energy Laying Mash...	1	Blue Seal Standard "16" Dairy Ration	1
Unity Horse Feed.....	1	Blue Seal Succulent Feed and Calving	1
Unity Improved Calf Ration.....	1	Ration.....	1
Unity Laying Mash.....	1	Blue Seal Super All-Mash Breeder's	1
Unity Pig & Hog Ration.....	1	Ration.....	1
Ventura Grain Co.		Blue Seal Super All-Mash Egg Ration	1
Every-Day Complete Grower &		Blue Seal Super All-Mash Growing	1
Layer Mash.....	1	Ration.....	1
Every-Day 20% Dairy.....	1	Blue Seal Super Mash for Breeders	1
Every-Day 16% Dairy.....	1	and Layers.....	1
Every-Day 16% Dairy Pelleted....	2	Blue Seal Super Starter and Broiler	2
Every-Day Fitting Ration.....	1	Blue Seal Test Ration.....	1
Every-Day Layer-Breeder Mash...	2	Blue Seal Turkey Growing.....	1
Every-Day Turkey Grower.....	2	Whitmoyer Laboratories, Inc.	
Ventura's 16%.....	1	Whitmoyer Quality Fish Meal 60%.	1
Victory Mills, Ltd.		Whitmoyer Quality 57% Fish Meal.	1
Solvent Extracted (Hi-Protein)		Wilson's Corn Products, Inc.	
Soybean Oil Meal.....	1	Wilson Hominy Feed.....	1
Vitality Mills, Inc.		Wirthmore Grain Co.	
Vitality Brand Body Builder Dog Food	1	Bliss Dairy Ration.....	2
Vitality Brand Professional Dog Food	1	Preferred Complete Growing Mash..	2
C. P. Washburn Co.		Preferred Complete Laying Ration..	2
Made Right Breeder.....	2	Preferred Growing Feed.....	1
Made Right Complete Breeder.....	2	Preferred High Energy Layer.....	2
Made Right Complete Broiler.....	1	*Preferred Laying Mash.....	1
Made Right Complete Growing Feed	1	Wood's 16% Dairy Feed.....	2
		Wood's Stock Feed.....	1
		Worcester Grain & Coal Co.	
		F-Ish-N-C Hog Grow.....	2
		Just Right 16% Dairy Feed.....	3
		Just-Rite Egg Mash.....	2
		Just Right Growing Mash.....	1
		Just Right Laying Mash.....	1

*See also table of "Brands Not Conforming to Guarantees."

Brands Not Conforming to Guarantees

This table includes brands that are one percent or more under guarantee in protein or fat or are one and one-half percent or more over guarantee in fiber.

Manufacturer and Brand	Protein		Fat		Fiber		Ash
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	
Barnett & Co., Ltd. Dried Brewers Grains.....	22.7	22	5.6	7	—	—	—
Brown-Forman Distillers Corp. BF Corn Distillers Dried Grains..	27.5	23	5.1	7	—	—	—
Clyde Milling Corp. Clyde Dog Food.....	26.2	25	6.0	7	4.2	4	9.0
Community Service, Inc. Community Growing Mash.....	19.0	18	2.5	4	—	—	—
Community Starter & Grower Mash.....	19.9	17	2.6	4	—	—	—
Chas. M. Cox Co. Wirthmore Improved Hi-Ener-G Starter and Broiler Ration...	17.7	20	—	—	4.0	4	—
Crawford Brothers, Inc. Crawford Hi-Energy Starter & Broiler Mash.....	20.0	21	4.3	4	—	—	—
Dean & Lee Pilgrim Growing Mash.....	20.4	17	—	—	6.8	4.5	—
D. H. Grandin Milling Co. Grandin's Calf Starter.....	16.7	18	—	—	—	—	—
Grandin's Complete Egg Mash...	17.0	15	—	—	6.2	4.5	—
D. Harbeck & Sons Welcome Dairy Feed.....	19.7	20	3.0	4	—	—	—
Welcome Dairy Feed.....	21.5	20	2.3	4	—	—	—
Jaquith & Co., Inc. Jaquith 20% Dairy Ration.....	19.2	20	2.3	3.5	—	—	—
Molson's Brewery, Ltd. Dried Brewers' Grains.....	22.5	22	4.5	7	—	—	—
Geo. Q. Moon & Co., Inc. Moon Dog Food.....	23.4	26	4.3	4	—	—	—
Moon Super Laying Mash.....	15.0	16	—	—	—	—	—
Ogden Grain Co. *Ogden Rabbit Pellets.....	15.5	16.5	—	—	—	—	—
R. C. Pratt & Co., Ltd. Ruler Brand Pure Wheat Shorts..	13.6	15.0	—	—	—	—	—
D. F. Riley *Riley's 16% Dairy Ration.....	16.4	16	3.5	4.5	—	—	—
Suni-Citrus Products Co. Sweet Suni-Citrus Pulp.....	6.0	6	3.2	5	13.2	15	4.4
Unity Feeds, Inc. Unity High Energy Growing Mash	13.8	15	—	—	3.9	4.5	—
Ventura Grain Co. Every-Day Dairy.....	20.5	22	2.5	4.5	—	—	—
Every-Day Dairy.....	21.7	22	3.1	4.5	—	—	—
C. P. Washburn Co. *Made Right Complete Layer....	17.0	16	—	—	8.4	6	—
Wirthmore Grain Co. *Preferred Laying Mash.....	18.0	20	—	—	—	—	—

* See also table of "Brands Substantially Complying with Guarantees."

Brands Containing Drugs

Manufacturer and Brand	Sulfaquinoxaline	
	Found	Guaranteed
Allied Mills, Inc.		
Wayne Universal Grower.....	0 013	0 0125
E. W. Bailey & Co., Inc.		
Pennant Chick Starter.....	0 021	0 0175
George B. Brown Corp.		
Brown's Hi-energy Broiler Ration.....	0 012	0 0175
Chas. M. Cox Co		
Wirthmore Complete Growing Ration.....	0 010	0 0125
Wirthmore Complete Growing Ration.....	0 0057	0 0125
Wirthmore Hi-Ener-G Grower.....	0 013	0 0125
Crawford Brothers, Inc.		
Crawford Complete Chick Starter.....	0 011	0 0125
Crawford Complete Growing Mash.....	0 021	0 0125
Crawford Hi-Energy Starter & Broiler Mash (a).....	0 011	0 0125
Crawford Hi-Energy Starter & Broiler Mash.....	0 015	0 0125
Crawford Turkey Growing Mash.....	none	0 0125
Elmore Milling Co., Inc.		
Elmore Chixsaver.....	0 011	0 0150
Elmore Chixsaver.....	0 017	0 0150
Elmore Super Broiler Ration.....	0 012	0 0150
Essex County Co-operative Farming Assn., Inc.		
S-X All Mash Growing.....	0 008	0 0125
S-X Starter and Broiler Ration.....	0 016	0 0175
Farm Bureau Association		
Chick Starter Mash.....	0 014	0 0150
High Energy Broiler and Starter Mash.....	0 013	0 0150
Rabbit Food Pellets.....	0 014	0 015
Flory Milling Co., Inc.		
Flory Starter Medimash No. 125 (a).....	0 011	0 0125
Flory Turkey Starter.....	0 012	0 0175
Flory 26% Turkey Starter Medimash 175.....	0 018	0 0175
D. H. Grandin Milling Co.		
Grandin's S-Q Control Mash.....	0 048	0 10
Grandin's Super Starter and Broiler Ration.....	0 020	0 0175
Grandin's Ten-Hi Broiler Ration.....	0 023	0 0175
Hales & Hunter Co.		
Red Comb Broiler Mash.....	0 016	0 0125
Red Comb Turkey Starter.....	0 019	0 0175
McMillen Feed Mills		
Master Mix Broiler Concentrate.....	0 040	0 0375
Master Mix Broiler Concentrate.....	0 043	0 0375
Merck & Co., Inc.		
Sulfaquinoxaline.....	100 0	100 0
Merrimack Farmers' Exchange, Inc.		
Fast-Gro Starter and Broiler.....	0 014	0 0175
Geo. Q. Moon & Co., Inc.		
Moon Complete Starter & Broiler Mash.....	0 009	0 0125
Ogden Grain Co.		
Ogden Growing Mash.....	0 013	0 0175
Ogden Hi-Energy Starter & Broiler.....	0 013	0 015
Park & Pollard Co., Inc.		
Hi-Power Broiler Ration.....	0 014	0 0175
Hi-Power Broiler Ration.....	0 015	0 0175
Hi-Power Broiler Ration.....	0 012	0 0175
Hi-Power Broiler Ration.....	0 014	0 0175
Hi-Prime Turkey Grower.....	0 013	0 0175
Lay or Bust Chick Starter.....	0 014	0 0175
Park & Pollard Complete Chick Starter.....	0 014	0 0175

a Deficient in protein.

Brands Containing Drugs—(Continued)

Manufacturer and Brand	Sulfaquinoxaline	
	Found	Guaranteed
Vineland Poultry Laboratories Vineland Sulfaquinoxaline Feedmix 25%.....	28.0	25.0
C. P. Washburn Co. Made Right High Energy Broiler..... Made Right High Energy Broiler..... Made Right High Energy Broiler..... Made Right Starting Feed..... Made Right Starting Feed..... Made Right Starting Feed.....	0.014 0.014 0.018 0.015 0.017 0.016	0.015 0.015 0.015 0.015 0.015 0.015
H. K. Webster Co. Advance Broiler..... Advance Broiler..... Blue Seal Super All-Mash Growing Ration (b) Blue Seal Super Starter and Broiler..... Blue Seal Turkey Starter.....	0.020 0.013 0.014 0.019 0.016	0.0175 0.0175 0.0175 0.0175 0.0175
	Nitrophenide	
	Found	Guaranteed
American Cyanamid Co., Fine Chemicals Div. Megastil 25%.....	25.5	25.0
Eastern States Farmers' Exchange, Inc. All-Mash Developer..... All-Mash Developer..... Proemake.....	0.018 0.019 0.017	0.01875 0.01875 0.01875
Fred A. Fountain Fountain's Improved High Energy Starter Broiler Ration	0.017	0.01875
Kasco Mills, Inc. Kasco Chick Starter.....	0.023	0.025
Quaker Oats Co. Ful-O-Pep Chick Starter.....	0.019	0.025
Ralston Purina Co. Purina Roaster Chow.....	0.016	0.0188
United Feeds, Inc. Unity Advance Ration..... Unity Super Ration..... Unity Super-Gro Ration.....	0.016 0.021 0.002	0.015 0.02 0.02
H. K. Webster Co. Blue Seal Chick Starter.....	0.020	0.025
Wirthmore Grain Co. Preferred High Energy Starter-Broiler Ration..... Preferred Starter & Broiler Ration.....	0.016 0.0095	0.01875 0.0125

b Tests indicate drug poorly mixed in feed. Several tests made show drug content to vary from 0.0094% to 0.015%.

Brands Containing Drugs—(Continued)

Manufacturer and Brand	Nitrophenide		Arsanilic Acid	
	Found	Guar- anteed	Found	Guar- anteed
Beacon Milling Co., Inc. Beacon Starter-Broiler Feed.....	0.024	0.025	0.010	0.009
Delaware Mills, Inc. Delaware Meg-A Broiler Mash.....	0.013	0.0187	0.011	0.0095
Delaware Meg-A Broiler Mash.....	0.013	0.0187	0.010	0.0095
Delaware Meg-A Broiler Finisher.....	0.019	0.0187	0.013	0.0095
Maritime Milling Co., Inc. B-B Ma-Co Broiler Ration.....	0.021	0.0187	0.012	0.01
B-B Ma-Co Broiler Ration.....	0.015	0.0187	0.010	0.01
Quaker Oats Co. Ful-O-Pep Broiler Mash.....	0.018	0.025	0.0061	0.0095
	Sulfaquinoxaline		3-Nitro-4-Hydroxy- phenylarsonic Acid	
	Found	Guar- anteed	Found	Guar- anteed
Allied Mills, Inc. Wayne Chick Starter.....	0.011	0.0125	0.0027	0.0025
Wayne Rocket Broiler Feed.....	0.015	0.0175	0.008	0.005
Wayne Rocket Broiler Feed.....	0.038	0.05	0.007	0.005
Wayne Rocket Broiler Feed.....	0.033	0.05	0.0045	0.005
Wayne Turkey Starter.....	0.015	0.0175	0.005	0.005
			3-Nitro-4-Hydroxy- phenylarsonic Acid	
			Found	Guar- anteed
Allied Mills, Inc. Wayne Chick Starter.....			0.004	0.005
Wayne Rocket Broiler Feed.....			0.005	0.005
Wayne Turkey Starter (a).....			0.006	0.005
Ralston Purina Co. Purina Broiler Chow Finisher.....			0.005	0.005
Purina Broiler Chow Starter.....			0.005	0.005
	Nitrophenide		3-Nitro-4-Hydroxy- phenylarsonic Acid	
	Found	Guar- anteed	Found	Guar- anteed
Ralston Purina Co. Purina Broiler Chow.....	0.021	0.02	0.0053	0.005
Purina Broiler Chow Finisher.....	0.017	0.02	0.006	0.005
Purina Broiler Chow Starter.....	0.020	0.02	0.005	0.005
Purina Broiler Chow Starter.....	0.020	0.02	0.0053	0.005

a Deficient in protein

Brands Containing Drugs—(Continued)

Manufactures and Brand		2-Amino-5-Nitrothiazole			
		Found	Guaranteed		
Chas. M. Cox Co. Wirthmore Turkey Growing Ration.....		0.052	0.05		
Eastern States Farmers' Exchange, Inc. Turkey-Grower.....		0.0447	0.05		
Ogden Grain Co. Ogden Turkey Grower & Developer.....		0.027	0.05		
	Sulfaquinoxaline	Sodium Arsanilate			
	Found	Guaranteed	Found	Guaranteed	
Chas. M. Cox Co. Wirthmore Complete Chick Starter.....		0.018	0.0175	0.008	0.0088
Essex County Co-Operative Farming Assn. S-X Starter and Broiler Connecticut Formula..		0.016	0.0175	0.008	0.0088
		Arsanilic Acid			
		Found	Guaranteed		
Dawe's Laboratories, Inc. Dawe's R-Sonic 20X		22.0	20.0		
Ventura Grain Co. Every-Day Grower Mash.....		0.007	0.005		
	Phenothiazine	Nicotine			
	Found	Guaranteed	Found	Guaranteed	
Chas. M. Cox Co. Wirthmore PN Mixture.....		0.20	0.45	0.048	0.045
Flory Milling Co., Inc. Flory Poultry Worming Mash.....		0.42	0.50	0.060	0.066
	Nitrophenide	Sodium Arsanilate			
	Found	Guaranteed	Found	Guaranteed	
Chas. M. Cox Co. Wirthmore Plus 2M Broiler Feed.....		0.0188	0.02	0.0102	0.0088

Brands Containing Drugs—(Concluded)

Manufacturer and Brand		4-Nitrophenyl- arsonic Acid			
		Found	Guar- anteed		
Ralston Purina Co. Purina Turkey Fatten 4N		0.028	0.025		
		Nitrofurazone			
		Found	Guar- anteed		
General Mills, Inc. Gold Medal Turkey Starter Mash		0.0028	0.0055		
	Nitrofurazone		Arsanilic Acid		
	Found	Guar- anteed	Found	Guar- anteed	
	0.0069	0.0055	0.008	0.00827	
		Furazolidone			
		Found	Guar- anteed		
Dr. Hess & Clark, Inc. Furazolidone Mixture		11.0	11.0		
	Sulfanilamide Derivative		3-Nitro-4-Hydroxy- phenylarsonic Acid		
	Found	Guar- anteed	Found	Guar- anteed	
Beacon Milling Co. Beacon Broiler Finisher		0.031	0.03	0.0096	0.009
		Sulfur			
		Found	Guar- anteed		
Beacon Milling Co., Inc. Beacon C-C Pellets		3.86	5.00		

Vitamin Oils

Manufacturer and Brand	Vitamin A U.S.P. Units per Gram	
	Found	Guaranteed
Alaska Fish Oil Extractors Alaska Brand Feeding Oil	2,590	2,250
E. F. Drew & Co., Inc. Vitamin A Oil.....	9,800	8,000
Gorton-Pew Fisheries Co., Ltd. Gorton's A & D Feeding Oil..... Gorton's A & D Feeding Oil Carotene Added.. Special Oil for Marvitic Blend..... Special Oil for Turkey Blend.....	920 3,610 5,050 4,200	750 3,000 5,000 4,000
Marden-Wild Corp. Marden's Vitamin A & D Feeding Oil.. Marden's Vitamin A & D Feeding Oil.. Marden's Vitamin A & D Feeding Oil.. Cod Liver Oil..... Cod Liver Oil.....	3,910 1,330 1,390 1,250 1,460	3,000 1,500 1,500 1,500 1,500
Silmo Chemical Corp. Silmo Vitamin Oil... Silmo Vitamin Oil...	2,510 2,740	2,250 2,250
Whitmoyer Laboratories, Inc. Whitmoyer Cod Liver Oil.. Whitmoyer Cod Liver Oil..	2,470 1,500	2,250 1,500

Mineral Mixtures

Manufacturer and Brand	Calcium		Phosphorus		Manganese		Magnesium		Iron		Fluorine	
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	Found	Maximum
Amburgo Co., Inc. Ambur-Phos.....	23.0	20.0	17.6	17.5	—	—	—	—	—	—	—	—
American Agricultural Chemical Co. Phos-Feed Brand Dicalcium Phosphate.....	25.0	25.0	21.0	21.0	—	—	—	—	—	.0014	—	.004
Dr. Hess & Clark, Inc. Dr. Hess Hog Special (a).....	25.5	15.0	4.6	3.5	.16	.10	—	—	—	—	—	—
International Minerals & Chemical Corp. 20 FOS Dicalcium Phosphate.....	26.7	24.0	18.9	18.5	—	—	—	—	—	.10	—	.10
20 FOS Dicalcium Phosphate.....	25.6	24.0	18.5	18.5	—	—	—	—	—	.11	—	.12
Limestone Products Corp. of America Lime Crest Brand Calcite Flour	34.2	33.0	—	—	—	—	2.8	2.6	—	—	—	—
Lime Crest Brand Delamix.....	29.2	26.5	—	—	6.7	6.0	—	—	2.4	2.0	—	—
Lime Crest Brand MICO Minerals.....	33.1	33.0	—	—	.27	.2	—	—	24	.2	—	—
Morton Salt Co. Morton's Free Choice Trace Mineralized Salt (b).....	—	—	.037	.038	.16	.25	—	—	.16	.16	—	—
John Reardon & Sons Rearco Di-Calcium Phosphate.....	24.0	—	18.3	19.0	—	—	—	—	—	.035	—	—
Shea Chemical Corp. Pure Test Calcium Carbonate.....	38.3	38.6	—	—	—	—	—	—	—	—	—	—
Pure Test Calcium Carbonate.....	38.6	38.6	—	—	—	—	.4	.5	—	—	—	—
Shea Dicalcium Phosphate.....	27.2	25.0	18.5	18.5	—	—	—	—	—	.0087	—	—
Shea Dicalcium Phosphate.....	28.0	25.0	18.2	18.5	—	—	—	—	—	.0057	—	—

a Salt found, 23.1%; guaranteed 23.0%.

b Salt found, 97.3%; guaranteed 96.0%.

Antibiotic Feed Supplements

Manufacturer and Brand	Chlortetracycline Hydrochloride Grams per Pound	
	Found	Guaranteed
American Cyanamid Co., Fine Chemicals Division		
Aurofac.....	1.7 1.4	1.8 1.8
Aurofac-2 A.....	4.2 3.6 3.5	3.6 3.6 3.6
Aurofac-10.....	12.0	10.0
	Procaine Penicillin Grams per Pound	
	Found	Guaranteed
Commercial Solvents Corporation		
No. 51 CSC Antibiotic Feed Supplement and Vitamin B ₁₂ Supplement.....	2.5	2.0

**Antibiotic Feed Mixtures
Therapeutic Level**

These brands substantially complied with guarantees of
protein, fat and fiber.

Manufacturer and Brand	Chlortetracycline Hydrochloride Grams per Ton	
	Found	Guaranteed
Allied Mills, Inc.		
Wayne H-A-D Krums.....	115	100
	100	100
Beacon Milling Co., Inc.		
Beacon Chlortetracycline Mix.....	210	180
Chas. M. Cox Co.		
Wirthmore Quickies.....	210	200
Dietrich & Gambrill, Inc.		
D. & G Fix-Etts.....	100	100
Eastern States Farmers' Exchange, Inc.		
Minuteman.....	100	100
Farm Bureau Association		
Chlortetracycline (Aureomycin) Mixture.....	160	100
Flory Milling Co.		
Flory Chlortetracycline (Aureomycin) Mixture.....	210	200
D. H. Grandin Milling Co.		
Grandin's Stim-U-Feed.....	125	200
McMillen Feed Mills		
Master Mix Biofeed.....	140	100
Park & Pollard Co., Inc.		
Lay or Bust T. N. T.....	120	200
Ralston Purina Co.		
Purina Check-R-Aid.....	190	200
Unity Feeds, Inc		
Unity Booster-Etts.....	108	100

Oat Products

Manufacturer and Brand	Protein		Fiber		Results of Microscopic Examination
	Found	Guaranteed	Found	Guaranteed	
E. W. Bailey & Co. Pennant Brand Fancy Ground Oats.	{ 12.8	12	10.0	12	As represented As represented
Barnett & Co., Ltd. Ground Oats . . .	{ 9.8 10.0 8.9	— — —	12.1 13.6 21.1	— — —	As represented Ground grain screenings Ground mixed screenings
Beacon Milling Co., Inc. Beacon Ground Oats . . .	—	—	—	—	As represented
Best Foods, Inc. Pulverized White Oats . . .	{ 11.7 11.7	— —	9.0 9.6	— —	As represented As represented
Canadian Grain Products, Ltd. Golden Harvest Pulverized White Oats. . .	{ 9.7 7.2	— —	17.6 16.9	— —	Ground grain screenings Ground grain screenings
Chas. M. Cox Co. Ground Oats	11.7	—	11.1	—	As represented
Doughboy Industries, Inc. New-Rich Pulverized White Oats.	13.6	11	13.6	13	Ground grain screenings
J. L. Dunnell & Son Ground Oats.	—	—	—	—	As represented
Elmore Milling Co., Inc. Elmore Pure Pulverized Oats.	—	—	—	—	As represented
Farm Bureau Assn. Ground Oats.	—	—	—	—	As represented
Flambeau Milling Co. Pulverized Mixed Feed Oats . . .	11.1	11	16.9	14.75	Ground mixed screenings
Fruen Milling Co. Fruen's Mixers' Pulverized White Oats. . .	10.2	10	15.4	15	As represented
General Mills, Inc. Pulverized Oats . . .	15.3	12	11.3	13	As represented
Reground Oat Hulls . . .	{ 5.2 4.8	2.5 2.5	—	—	As represented As represented
W. L. Hogg, Ltd. Ground Oats . . .	{ 9.4 7.7 8.6	— — —	19.0 22.1 21.8	— — —	Ground mixed screenings Ground mixed screenings Ground mixed screenings
Inter Continental Grain Co., Ltd. Ground oats	8.1	—	19.3	—	Ground mixed screenings
John Jervis Grain Co., Ltd. Jervis Brand Ground Oats.	{ 9.7 12.1 10.0 10.1 12.2 9.3	— — — — — —	17.7 9.4 8.4 15.2 6.9 20.0	— — — — — —	Ground grain screenings Ground grain screenings Ground grain screenings Ground grain screenings Ground grain screenings Ground mixed screenings
Mackay Cereals, Ltd. Fine Ground White Oats.	11.3	—	8.6	—	Ground grain screenings

Oat Products (Concluded)

Manufacturer and Brand	Protein		Fiber		Results Microscopic Examination
	Found	Guar- anteed	Found	Guar- anteed	
Ogilvie Flour Mills Co., Ltd. Pulverized White Oats.....	10.9	—	11.3	—	Ground grain screenings
Quaker Oats Co. Vim Oat Huller Feed	3.6	2.5	—	—	As represented
Ralston Purina Co. Ground Oats.....	—	—	—	—	As represented
James Richardson & Sons, Ltd. Ground Oats.....	13.5	12	7.1	14.5	Ground grain screenings

Alfalfa Meals

Manufacturer and Brand	Protein		Fiber		Carotene Milligrams per Pound	U.S.P. Units Vitamin A per Pound (Vitamin A Equivalent from Carotene)
	Found	Guar- anteed	Found	Guar- anteed		
Barton Mills, Inc. Dehydrated Alfalfa Meal 17%	19.2	17	25.8	27	34.5	57,510
Bremco Alfalfa Mills, Inc. Bremco Medo Green Alfalfa Meal.....	17.1	17	23.9	27	35.9	59,840
Calvert Milling Co. 17% Dehydrated Alfalfa Meal	21.9	17	24.5	27	77.5	129,190
Caro-Green, Inc. Caro-Green Dehydrated Alfalfa Leaf Granules....	22.3	20	17.8	18	35.8	59,680
17% Caro-Green Dehydrated Alfalfa Granules '56.....	17.5	17	24.2	27	28.6	47,680
Central Mills, Inc. Cent-O-Green Alfalfa Meal..	{ 17.9 17.5	{ 17 17	{ 28.9 ^a 26.4	{ 27 27	{ 24.9 29.5	{ 41,510 49,180
H. E. Clark Co. HEC Co. Alfalfa Meal.....	19.9	17	21.5	27	79.4	132,360
Farm Bureau Cooperative Assn., Inc. Alfalfa Meal.....	17.4	17	27.7	27	15.4	25,670
Hayward, Inc. Dehydrated Alfalfa Meal....	{ 19.4 20.5	{ 17 17	{ 26.3 22.5	{ 27 27	{ 50.4 70.9	{ 84,020 118,190
Keystone Chemurgic Corp. Solvent Extracted 20% De- hydrated Alfalfa Meal Residue.....	20.0	20	22.9 ^a	17	13.1	21,840
Keystone Dehydrators Keystone Super-Green De- hydrated Alfalfa Meal...	{ 18.1 18.5 18.6 20.0	{ 17 17 17 17	{ 24.0 25.1 25.1 24.8	{ 27 27 27 27	{ 39.5 32.2 49.4 18.8	{ 65,850 53,680 82,350 31,340
4HR Alfalfa Co., Inc. Dehydrated Alfalfa Meal 17..	13.7 ^b	17	27.4	27	15.9	26,500
Morrison & Quirk M & Q Dehydrated Alfalfa Meal.....	24.5	17	15.0	27	38.2	63,680
National Alfalfa Dehydrating & Milling Co. Jack Rabbit 17% Dehydrated Alfalfa Meal.....	17.1	17	24.4	27	33.6	56,010
Jack Rabbit 17% Dehydrated Alfalfa Granules.....	20.0	17	23.8	27	69.8	116,360
Neumond Co. Neumond's 17% Dehydrated Alfalfa Meal.....	{ 15.5 ^b 15.6 ^b	{ 17 17	{ 27.5 26.6	{ 27 27	{ 31.3 38.1	{ 52,180 63,510
Quality Alfalfa Products, Inc. Green Gold Brand Dehydrated Alfalfa Meal 17%.....	{ 18.2 17.9	{ 17 17	{ 22.9 24.8	{ 27 27	{ 55.3 35.4	{ 92,190 59,010

^a Fiber excessive.^b Protein deficient.

Alfalfa Meals—(Concluded)

Manufacturer and Brand	Protein		Fiber		Carotene Milligrams per Pound	U.S.P. Units Vitamin A per Pound (Vitamin A Equivalent from Carotene)
	Found	Guar- anteed	Found	Guar- anteed		
Ralston Purina Co., Ltd.						
Purina Alfalfa Meal	14.6	13	31.9	33	2.04	3,400
Schoeneck Farms, Inc.						
Schoeneck's Super-Green De- hydrated Alfalfa Meal . . .	17.2	17	29.3 ^a	27	48.5	80,850
	19.9	17	25.4	27	53.5	89,180
	19.1	17	22.3	27	64.9	108,190
	19.0	17	23.4	27	63.1	105,190
	19.2	17	25.8	27	44.0	73,350
Schwab Brothers Mills, Inc.						
Dehydrated Bavaria Brand Alfalfa Meal 17%	20.3	17	21.8	27	54.4	90,680
Sioux Alfalfa Meal Co.						
Dehydrated Alfalfa Meal 17%	19.2	17	—	27	27.7	46,180
W. J. Small Co., Inc.						
Small's 17% Dehydrated Al- falfa Meal	19.7	17	25.2	27	42.7	71,180

^a Fiber excessive^b Protein deficient

Feed Supplements and Vitamin Mixtures

Manufacturer and Brand	Vitamin A U. S. P. Units per Pound		Riboflavin Milligrams per Pound		Niacin Milligrams per Pound		Choline Chloride Milligrams per Pound	
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed
American Cyanamid Co., Fine Chemicals Division								
Fortated Brand Feed Supplement 2-49 C	—	—	2,120	2,000	9,440	9,000	10,560	10,000
Niacin	—	—	—	—	<i>a</i>	—	—	—
Niacin	—	—	—	—	<i>a</i>	—	—	—
Blatchford's Calf Meal Co.								
Blatchford's Calf-Pab.	3,814	12,000	27.9	23	—	—	—	—
Borden Co., Special Products Div.								
Borden's MF-FL Blend 80D (b)	—	—	42	45	166	140	1,140	1,000
Commercial Solvents Corp.								
B.Y.-250 Dried Grain & Cane Syrup Fermentation Solubles	—	—	114	114	—	—	—	—
B.Y.-500 Dried Grain & Cane Syrup Fermentation Solubles	—	—	545	227	—	—	—	—
B.Y.-500 Dried Grain & Cane Syrup Fermentation Solubles	—	—	254	227	—	—	—	—
B.Y.-500 Dried Cane Syrup Fermentation Solubles	—	—	318	227	—	—	—	—
B.Y.-21 Dried Grain and Skimmed Milk Fermentation Solubles	—	—	4,110	3,630	—	—	—	—
B. Y. Vitamin Feed Supplement 60	—	—	1,952	2,000	8,063	9,000	11,771	10,000
CSC Choline Supplement 25	—	—	—	—	<i>c</i>	<i>c</i>	—	—
Continental Distilling Corp.								
Dried Corn Distillates Solubles	—	—	17.6	—	—	—	—	—
Dawe's Laboratories, Inc.								
Dawe's 555 Broiler Base	39,900	—	51	45.4	613	—	—	—
Dawe's Fermentation Supplement 100	—	—	57.0	—	—	—	—	—
Dawe's Vitamelek (D.V. Base)	18,890	14,500	28.1	31.75	199	180	4,660	3,000
Dawe's Vitamelek (D.V. Base)	15,600	14,500	32.4	31.75	215	180	3,950	3,000
Dawe's Vitamelek (D.V. Base)	19,660	14,500	44.8	31.75	185	180	4,000	3,500
Dawe's Vitamelek Green Tag	19,500	14,500	36.6	31.75	181	180	4,110	3,500
Dawe's Vitamelek Green Tag	17,610	14,500	36.2	31.75	208	180	4,030	3,000
Dawe's Vitamelek Red Tag	30,400	29,000	24.0	31.75	112	90	3,780	3,000
Dawe's Vitamelek Red Tag	33,370	29,000	34.8	31.75	124	90	3,630	3,000
Dawe's Vitamelek Red Tag	26,200	29,000	38.9	31.75	115	90	4,030	3,000
Dawe's Vitamelek Ruminant Type	50,400	50,000	38.0	15.4	170	90	2,630	1,816
Dawe's Vitamelek Ruminant Type	59,930	50,000	15.6	15.4	104	90	2,680	1,816
Dawe's Vitamelek Ruminant Type	87,500	50,000	34.5	15.4	106	90	—	—
Dawe's Vitamelek Ruminant Type	22,900	29,000	29.1	15.4	92.4	90	2,090	1,816

Feed Supplements and Vitamin Mixtures (Continued)

Manufacturer and Brand	Vitamin A U. S. P. Units per Pound		Riboflavin Milligrams per Pound		Niacin Milligrams per Pound		Choline Chloride Milligrams per Pound	
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed
Gorton-Pew Fisheries Co., Ltd. Gorton's All-Blend "Junior" Gorton's Turkey Blend	68,380 148,100	45,000 80,000	21.9 51.0	18 40	254 480	200 500	— —	— —
Haffner & Co., Inc. Brewers' Dried Yeast	—	—	9.8	—	—	—	—	—
H. P. Hood & Sons, Inc. Powdered Skim Milk	—	—	7.7	—	—	—	—	—
Merck & Co., Inc. Choline Chloride 25% Choline Chloride 25%	— —	— —	— —	— —	— —	— —	f g	f g
Narragansett Brewing Co. Dried Brewers' Yeast	—	—	10.3	—	—	—	—	—
National Distillers Products Corp. Naditisol Brand Corn Distillers Dried Solubles Produlac Special Process Corn Distillers Dried Grains with Solubles Produlac Special Process Corn Distillers Dried Grains with Solubles	— — — — —	— — — — —	12.3 9.8 5.6	— — —	— — —	— — —	— — —	— — —
Nopco Chemical Co. Nopco Custom Mix No. 1 BJZ	322,300	300,000	334	400	4,240	4,000	11,550	10,000
Phenix Foods Co. Kraco Dried Whole Whey	—	—	10.5	—	—	—	—	—
Publicker Industries, Inc. "PACO" Molasses Distillers Dried Solubles	—	—	7.3	—	—	—	—	—
Joseph E. Seagram & Sons, Inc. Seagram's Corn Distillers Dried Solubles	—	—	17.2	—	—	—	—	—

Feed Supplements and Vitamin Mixtures—(Concluded)

Manufacturer and Brand	Vitamin A U. S. P. Units per Pound		Riboflavin Milligrams per Pound		Niacin Milligrams per Pound		Choline Chloride Milligrams per Pound	
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed
Stock-Gro, Inc. Simmons Stock-Gro,	—	—	8.6	—	—	—	735	633.4
Unity Feeds, Inc. Calf Super Milk Replacer	12,710	10,000	—	—	—	—	—	—
U. S. Industrial Chemicals Co. (U S) Brand 25%, Choline Chloride Dry Mix CH-25 .. (U S) Riboflavin Supplement No. 363,	—	—	4,090	3,630	—	—	—	—
Western Condensing Co. Pooles, M.-N.-C.	—	—	25.8	23	—	—	—	—
Whitmoyer Laboratories, Inc. Clo-Meal (1)	—	—	88.6	70	795	700	4,270	3,500
Clo-Meal	—	—	97	70	803	700	3,950	3,500
Dry-Cel 3000A	1,384,700	1,360,000	—	—	—	—	—	—
Dry-Cel 3000A	1,362,000	1,360,000	—	—	—	—	—	—
Flax-A-Free (1)	—	—	64	60	725	700	4,340	4,000
Flax-A-Free (1)	—	—	63.8	60	—	—	—	—
Flax-A-Free (1)	—	—	126	100	796	700	5,260	4,000
Flax-A-Free	—	—	55	20	—	—	—	—
Corn Tolu	—	—	31.8	20	—	—	—	—
Corn Tolu	—	—	—	—	—	—	—	—

- Niacin found, 100 :
 a. Betaine chloride found, 5,440, guaranteed 5,000 milligrams per pound
 b. Choline chloride found, 25.6%, guaranteed 25%
 c. Precipitated calcium found, .031, guaranteed .03 grams per pound
 d. Dextrose, 10 percent
 e. Choline chloride found, 27.6%, guaranteed 25%
 f. Choline chloride found, 26.4, guaranteed 25%
 g. Maltose found, 3.18, guaranteed 1.55%
 h. Choline chloride found, 28.8, guaranteed 25.0%
 i. Potassium found, 8,810, guaranteed 3,500 milligrams per pound
 j. Betaine found, 4,720, guaranteed 4,000 milligrams per pound
 k. Betaine found, 4,260, guaranteed 4,000 milligrams per pound

Directory of Manufacturers, who Registered Seeds for Sale in Massachusetts in 1955

- Acme-Evans Co., Inc., 902 West Washington Ave., Indianapolis 9, Ind.
 L. P. Adams Co., 484 Housatonic St., Dalton, Mass.
 Adams Packing Association, Inc., Auburndale, Florida
 Ajax Dog Food Co., 49 Pine St., Dedham, Mass.
 Albers Milling Co., 5045 Wilshire Blvd., Los Angeles 36, Cal.
 Allied Mills, Inc., Chicago, Ill.
 Amburgo Co., Inc., 1315-17 Walnut St., Philadelphia 7, Penn.
 American Agricultural Chemical Co., 50 Church St., New York 7, N. Y.
 American Crystal Sugar Co., 600 Boston Bldg., Denver, Col.
 American Cyanamid Co., Fine Chemicals Div., Princeton, N. J.
 American Maize-Products Co., 100 East 42nd St., New York 17, N. Y.
 Anderson Feed Store, Inc., Box 147, Townsend, Mass.
 Animal Foundation, Inc., Sherburne, N. Y.
 Arcady Farms Milling Co., 500 West 138th St., Chicago 27, Ill.
 Archer-Daniels-Midland Co., Linseed Oil Meal Dept., P. O. Box 839, Minneapolis 2, Minn.
 Archer-Daniels-Midland Co., Soybean Oil Meal Dept., 700 Investors Bldg., Minneapolis, Minn.
 Armour & Co., Dash Div., U. S. Yards, Chicago 9, Ill.
 Ashcraft-Wilkinson Co., 601 Trust Co. of Georgia Bldg., Atlanta, Ga.
- B & W Canning Co., Inc., P. O. Box 98, Groveland, Florida
 E. W. Bailey & Co., Inc., Montpelier, Vt.
 H. J. Baker & Bro., 600 Fifth Ave., New York 20, N. Y.
 Bannock Food Co., Inc., Esco Bldg., East Biddle St., West Chester, Penn.
 Barber & Bennett, Inc., Arch & Church Sts., Albany, N. Y.
 Barnett & Co., Ltd., 417 St. Peter St., Montreal 1, Que., Canada
 Battle Creek Dog Food Co., 60 East State St., Battle Creek, Mich.
 Beacon Milling Co., Inc., Cayuga, N. Y.x
 Berkman Grain Co., North Franklin, Conn.
 Best Dog Food Co., 447 Timpson Place, Bronx 55, N. Y.
 Best Foods, Inc., 1442 Marine Trust Bldg., Buffalo, N. Y.
 Blatchford Calf Meal Co., 2 Madison St., Waukegan, Ill.
 Borden Co., Special Products Div., 350 Madison Ave., New York 17, N. Y.
 Borden Grain Co., 700 West Water St., Taunton, Mass.
 Borden's Soy Processing Co., Division of the Borden Co., Kankakee, Ill.
 Brown-Forman Distillers Corp., 1908 Howard St., Louisville, Ky.
 George B. Brown Corp., Ipswich, Mass.
 Buckeye Cotton Oil Co., 6th & Main Sts., Cincinnati, Ohio
 Buckeye Sugars, Inc., Ottawa, Ohio
- Cal-Cod Process Co., New Hamburg, N. Y.
 Calvert Milling Co., Hoytville, Ohio
 Canada Starch Co., Ltd., 1940 Sun Life Bldg., Montreal, Que., Canada
 Cargill, Inc., 200 Grain Exchange Bldg., Minneapolis 15, Minn.
 Central Mills, Inc., Dunbridge, Ohio
 Central Soya Co., Inc., Fort Wayne, Ind.
 Citrus Feed Co., P. O. Box 513, Lakeland, Florida
 H. E. Clark Co., 419 Main St., Winfield, Kan.
- Clinton Foods, Inc., Clinton, Iowa
 Clyde Milling Corp., 15 Sodus St., Clyde, N. Y.
 Coatsworth and Cooper, Ltd., 67 Yonge St., Toronto, Ont., Canada
 Commercial Solvents Corp., 1331 South First St., Terre Haute, Ind.
 Community Service, Inc., Canaan, Conn.
 Consolidated Products Co., 119 North Washington Ave., Danville, Ill.
 Consolidated Rendering Co., 178 Atlantic Ave., Boston 10, Mass.
 Continental Distilling Corp., 1429 Walnut St., Philadelphia 2, Penn.
 Copeland Flour Mills, Ltd., Midland, Ont., Canada
 Corn Products Refining Co., 17 Battery Place, New York 4, N. Y.
 Courcy & Sons Grain Co., Taunton, Mass.
 Cover Grain & Feed Co., 150 Middle St., Lowell, Mass.

- Chas. M. Cox Co., 177 Milk St., Boston 9, Mass.
 Crawford Brothers, Inc., 109 Delaware St., Walton, N. Y.
- Dairy Association Co., Inc., Lyndonville, Vt.
 Dairymen's League Co-Operative Association, Inc., 100 Park Ave., New York 17, N. Y.
 Dawe's Laboratories, Inc., 4800 South Richmond St., Chicago 32, Ill.
 Dawnwood Farms, Smithfield Road, Amenia, N. Y.
 Dean & Lee, Chemung St., Horseheads, N. Y.
 Decatur Milling Co., Inc., P. O. Box 1320, Decatur, Ill.
 Decatur Soy Products Co., 518 East Gault St., Decatur, Ill.
 Delaware Mills, Inc., Front St., Deposit, N. Y.
 Delphos Grain & Soya Products Co., Delphos, Ohio
 Frank Diauto, 87 Warren St., Randolph, Mass.
 F. Diehl & Son, Inc., 180 Linden St., Wellesley 81, Mass.
 Dietrich & Gambrill, Inc., South Carroll St., Frederick, Md.
 Dougherty Feed Co., Inc., Willow St., Louisville, Ohio
 John C. Dow Co., 40-44 Prospect St., Gloucester, Mass.
 Drackett Products Co., 5020 Spring Grove Ave., Cincinnati 32, Ohio
 J. L. Dunnell & Son, Bernardston, Mass.
 E. I. du Pont de Nemours & Co., Wilmington, Del.
- Eastern States Farmers' Exchange, Inc., 26 Central St., West Springfield, Mass
 Eastman Chemical Products Co., Inc., Kingsport, Tenn.
 8 in 1 Pet Products, Inc., 107 Bleecker St., New York 12, N. Y.
 Elmore Milling Co., Inc., Oneonta, N. Y.
 John W. Eshelman & Sons, 244 North Queen St., Lancaster, Penn.
 Essex County Co-operative Farming Association, Topsfield, Mass.
 Evans Milling Co., Inc., 1730 West Michigan St., Indianapolis, Ind.
 Excelsior Milling Co., 714 Flour Exchange, Minneapolis, Minn.
- Fairmont Foods Co., Inc., 197 Scott St., Buffalo, N. Y.
 Farm Bureau Association, 155 Lexington St., Waltham 54, Mass.
 Farm Bureau Cooperative Association, Inc., 245 North High St., Columbus 16, Ohio
 Farmers Feed Co., 375 Johnson Ave., Brooklyn 6, N. Y.
 Farmers' Marketing & Supply Co., 5903 Northwest Highway, Chicago 31, Ill.
 Ferneau Grain Co., Gibson Bldg., Blanchester, Ohio
 Fishery Products, Inc., 1200 West 9th St., Cleveland 13, Ohio
 Florida Citrus Cannery Cooperative, Lake Wales, Florida
 Flory Milling Co., Inc., Bangor, Penn.
 Fred A. Fountain, 355 Tremont St., Taunton, Mass.
 Fruit Industries, P. O. Box 338, Bradenton, Florida
- Nicholas Gangone, R. D. No. 2, Plympton St., Middleboro, Mass.
 General Foods Corp., Birds Eye Div., 209 New Boston St., Woburn, Mass.
 General Foods Corp., Corn Mill Div., Kankakee, Ill.
 General Foods Corp., Gaines Div., 180 South Dearborn Ave., Kankakee, Ill.
 General Mills, Inc., 400 Second Ave. South, Minneapolis, Minn.
 General Mills, Inc., Larowe Region, Box 68, North End Station, Detroit 2, Mich.
 Glidden Co., Soya Products Div., 1825 North Laramie Ave., Chicago 39, Ill.
 Gloucester By-Products, Inc., State Fish Pier, Gloucester, Mass.
 Roy Goff & Co., Inc., 1403 Bethlehem Pike, Flourtown, Penn.
 Goldenrod Oil Meal Sales Co., 727 Beale Ave., Memphis 1, Tenn.
 Gorton-Pew Fisheries Co., Ltd., 327 Main St., Gloucester, Mass.
 D. H. Grandin Milling Co., Jamestown, N. Y.
 Great Atlantic & Pacific Tea Co., 817 Andrus Bldg., Minneapolis 2, Minn.
- Haffenreffer & Co., Inc., 30 Germania St., Boston 30, Mass.
 Hales & Hunter Co., 141 West Jackson Blvd., Chicago, Ill.
 D. Harbeck & Sons, 405 Earle St., New Bedford, Mass.
 Harper Feed Mills, Inc., 271 West Wheeling St., Washington, Penn.
 Hartz Mountain Products Corp., 36 Cooper Square, New York 3, N. Y.
 Hayward, Inc., Oak Harbor, Ohio
 Dr. Hess & Clark, Inc., 7th & Orange Sts., Ashland, Ohio
 Hi-Life Packing Co., 431 South Dearborn St., Chicago 5, Ill.

W. L. Hogg, Ltd., 2965 Notre Dame East, Montreal, Que., Canada
Hoham Laboratories, Inc., Walnut St., Auburn, Ind.
H. P. Hood & Sons, Inc., 500 Rutherford Ave., Boston 29, Mass.
E. C. & W. L. Hopkins, Inc., Greenfield, N. H.
Hubinger Co., 601 Main St., Keokuk, Iowa
Humphreys-Godwin Co., 2246 Park Ave., Memphis, Tenn.

Illinois Cereal Mills, Inc., South Jefferson Ave., Paris, Ill.
Illinois Yeast Co., Box 105, Princeton, Ill.
Independent Tallow Co., 39 Cedar St., Woburn, Mass.
International Milling Co., 800 McKnight Bldg., Minneapolis, Minn.
International Minerals & Chemical Corp., 20 North Wacker Drive, Chicago 6, Ill.
International Stock Food Corp., P. O. Box 271, Delhi, N. Y.

Jaquith & Co., Inc., 305 Main St., Woburn, Mass.
John Jervis Grain Co., 67 Yonge St., Toronto, Ont., Canada.

Kasco Mills, Division of Corn Products Sales Co., Waverly, N. Y.
Kellogg Co., Feed Dept., 235 Porter St., Battle Creek, Mich.
Spencer Kellogg & Sons, Inc., 98 Delaware Ave., Buffalo 2, N. Y.
Kennel Food Supply Co., Inc., 63 Mill Hill Ter., Fairfield, Conn.
Keystone Chemurgic Corp., R. D. No. 1, Bethlehem, Penn.
Keystone Dehydrators, Box 204, Nazareth, Penn.
H. C. Knoke & Co., 5728 West Roosevelt Road, Chicago 50, Ill.
Chas. A. Krause Milling Co., 404 East State St., Milwaukee 1, Wis.
Kronick's Coal & Grain Co., 43 Pleasant St., Adams, Mass.
Kuder Pulp Sales Co., Lake Alfred, Florida

Lauhoff Grain Co., P. O. Box 571, Danville, Ill.
Lauhoff Soya Co., P. O. Box 571, Danville, Ill.
Libby, McNeill & Libby, 4134 South Packers Ave., Chicago 9, Ill.
Libner Grain Co., Inc., 25 Commerce St., Norwalk, Conn.
Limestone Products Corp. of America, 122 Main St., Newton, N. J.
Lincoln Mills, Inc., 1203 West 23d St., Indianapolis, Ind.
L. B. Lovitt & Co., 314 Cotton Exchange Bldg., Memphis, Tenn.

McMillen Feed Mills, Div. of Central Soya Co., Inc., Fort Wayne 2, Ind.
Mansfield Milling Co., Mansfield, Mass.
Maple Leaf Milling Co., Ltd., Toronto, Ont., Canada
Marden-Wild Corp., 500 Columbia St., Somerville 43, Mass.
Marianna Sales Co., 510 Cotton Exchange Bldg., Memphis, Tenn.
Maritime Milling Co., Inc., 1009 Chamber of Commerce, Buffalo 2, N. Y.
Marvin Grain Co., 31 Cove Road, South Dartmouth, Mass.
Merchants Creamery Co., 536 Livingston St., Cincinnati 14, Ohio
Merck & Co., Inc., Rahway, N. J.
Merrimack Farmers' Exchange, Inc., 10 Pleasant St. Ext., Concord, N. H.
Miller Alfalfa Co., Jackson & Gorman Sts., Defiance, Ohio
Miner-Hillard Milling Co., 825 Second National Bank Bldg., Wilkes-Barre, Penn.
Minute Maid Corp., Leesburg, Florida
Monsanto Chemical Co., 1700 South Second St., St. Louis 4, Mo.
Geo. Q. Moon & Co., Inc., 201 Chenango St., Binghamton, N. Y.
Jas. F. Morse & Co., 11 Horace St., Somerville 43, Mass.
Morton Salt Co., 120 South LaSalle St., Chicago 3, Ill.
Mowat, Wilson & Co., 18675 James Couzens Highway, Detroit 35, Mich.
Myzon, Inc., 1247 West Belmont Ave., Chicago, Ill.

Nappanee Milling Co., Inc., 301 South Jackson St., Nappanee, Ind.
National Alfalfa Dehydrating & Milling Co., 101 South 4th St., Lamar, Col.
National Biscuit Co., 449 West 14th St., New York 14, N. Y.
National Biscuit Co., Toledo Mill, 2221 Front St., Toledo 5, Ohio
National Distillers Products Corp., 99 Park Ave., New York 16, N. Y.
National Oats Co., 1515 H Ave. N. E., Cedar Rapids, Iowa
National Vitamin Products Co., 3401 Hiawatha Ave., Minneapolis 6, Minn.
Neumond Co., 300 Merchants Exchange Bldg., St. Louis 2, Mo.

Nitrogen Div., Allied Chemical & Dye Corp., P. O. Drawer 61, Hopewell, Va.
 Nopco Chemical Co., Harrison, N. J.
 North American Continental Co., Inc., 118 Produce Exchange Bldg., 2 Broadway, New York 4, N. Y.

Ogden Grain Co., Utica, N. Y.
 Old Mother Hubbard Dog Food Co., Inc., 40-44 Prospect St., Gloucester, Mass.
 Old Trusty Dog Food Co., 278 West St., Needham Heights 94, Mass.
 Orleans Candy Co., 431 South Dearborn St., Chicago 5, Ill.

Pabst Brewing Co., 221 North LaSalle St., Chicago, Ill.
 Palm Grain Co., Lowell, Mass.
 Park & Pollard Co., Inc., 356 Hertel Ave. Buffalo 7, N. Y.
 George H. Parker Grain Co., 56 Water St., Danvers, Mass.
 Pasco Packing Co., Dade City, Florida
 Patent Cereals Co., Geneva, N. Y.
 Penick & Ford Ltd., Inc., Cedar Rapids, Iowa
 Chas. Pfizer & Co., Inc., 11 Bartlett St., Brooklyn 6, N. Y.
 Phenix Foods Co., Div. of Kraft Foods Co., 460 East Illinois St., Chicago, Ill.
 Pillsbury Mills, Inc., Minneapolis 2, Minn.
 Post Cereals Division, General Foods Corp., 275 Cliff St., Battle Creek, Mich.
 Publicker Industries, Inc., 1429 Walnut St., Philadelphia 2, Penn.

Quaker Oats Co., Merchandise Mart Plaza, Chicago 54, Ill.

Ralston Purina Co., 835 South Eighth St., St. Louis 2, Mo.
 John Reardon & Sons Division of Wilson & Co., Inc., 51 Waverly St., Cambridge, Mass.
 Redbird Farm, Inc., Wrentham, Mass.
 Red Star Yeast & Products Co., 221 East Buffalo St., Milwaukee 1, Wis.
 D. F. Riley, Hatfield, Mass.
 Riverside Elevator Co., 1366 Penobscot Bldg., Detroit, Mich.
 Rudhard Products, Inc., 248 Michigan Ave., Buffalo 3, N. Y.
 Russell-Miller Milling Co., 900 Midland Bank Bldg., Minneapolis 1, Minn.
 Ryther & Warren Co., Belchertown, Mass.

Schoeneck Farms, Inc., R.D. No. 3, Nazareth, Penn.
 Sea Board Supply Co., 35th & Grays Ferry Ave., Philadelphia 46, Penn.
 Joseph E. Seagram & Sons, Inc., Seventh Street Road, Louisville 1, Ky.
 Shea Chemical Corp., 1201 St. Paul St., Baltimore 2, Md.
 Sherwin-Williams Co., 101 Prospect Ave., N. W., Cleveland, Ohio
 Silmo Chemical Corp., Vineland, N. J.
 David Small, East Hartford, Conn.
 W. J. Small Co., Division of Archer-Daniels-Midland Co., 1200 Oak St., Kansas City 6, Mo.
 Allen V. Smith, Inc., Marcellus Falls, N. Y.
 B. T. Smith Concentrates, Inc., P.O. Box 398, Lakeland, Florida
 J. H. Smith Grain, Inc., Haverhill, Mass.
 Smith Meal Co., Inc., Amagansett, N. Y.
 Southern Cotton Oil Co., 815 Nelson St., Greenville, Miss.
 Southern Fruit Distributors, Inc., Orlando, Florida
 Spratt's Patent (America) Ltd., 18 Congress St., Newark 5, N. J.
 A. E. Staley Manufacturing Co., Eldorado & 22nd Sts., Decatur, Ill.
 Standard Brands, Inc., 595 Madison Ave., New York 22, N. Y.
 Sturdy Dog Food Co., 2103 West Genesee St., Syracuse, N. Y.
 Suni-Citrus Products Co., Haines City, Florida
 Sunshine Biscuits, Inc., Milling Division, Mechanic St., Grafon, Ohio
 Swansea Grain Co., 970 Brayton Ave., Somerset, Mass.
 Swift & Co., Pard Dept., Union Stock Yards, Chicago 9, Ill.
 Swift & Co., Soybean Mill, Fostoria, Ohio

Taft Bros., Uxbridge, Mass.
 Topnotch Flour Mills, Seaforth, Ont., Canada

Union Starch & Refining Co., 301 Washington St., Columbus, Ind.
 United Co-Operative Farmers, Inc., 339 Broad St., Fitchburg, Mass.
 Unity Feeds, Inc., 177 Milk St., Boston, Mass.

George Urban Milling Co., 332 North Oak St., Buffalo 3, N. Y.

U. S. Industrial Chemical Co., Division of National Distillers Products Corp., 99 Park Ave., New York 16, N. Y.

Van Iderstine Co., 37-30 Review Ave., Long Island City 1, N. Y.

Ventura Grain Co., 7 Purchase St., Taunton, Mass.

Vitality Mills, Inc., 2020 Board of Trade Bldg., Chicago 4, Ill.

O. B. Vunck & Son, Voorheesville, N. Y.

Hiram Walker & Sons, Inc., Foot of Edmund St., Peoria, Ill.

C. P. Washburn Co., Middleboro, Mass.

H. K. Webster Co., 24 West St., Lawrence, Mass.

Western Condensing Co., Box 739, Appleton, Wis.

Whitmoyer Laboratories, Inc., 19 North Railroad St., Myerstown, Penn.

Wilson's Corn Products, East Fourth St., Rochester, Ind.

Wirthmore Grain Co., Taunton, Mass.

Worcester Grain & Coal Co., 294 Franklin St., Worcester, Mass.

Yieldmor Feeds, Inc., 101 South Downing St., Piqua, Ohio

Thirty-fifth Annual Report of Pullorum Disease Eradication in Massachusetts



U. 30, 1956

During the 1954-55 testing season a total of 386 chicken, turkey, and pheasant flocks was tested. Among 1,204,232 samples tested, 0.12 percent were found positive, which is a definite increase over the percentage (0.004) positive in the previous season. Pullorum infection was detected in eight flocks, of which five were negative the previous season. At the close of the testing season five flocks were classified as infected. It is encouraging to note that 98.54 percent of all birds tested are in nonreacting flocks.

THIRTY-FIFTH ANNUAL REPORT OF PULLORUM DISEASE ERADICATION IN MASSACHUSETTS 1954-55

H. Van Roekel, Miriam K. Clarke,
C. F. Smyser, and G. H. Snoeyenbos

INTRODUCTION

Results for the 1954-55 testing season reveal that a total of 386 flocks, representing 1,204,232 samples, was tested, slightly less than that of the previous season. The definite increase in the percentage of positive tests was due largely to the testing of a few flocks that revealed a high percentage of reactors. Pullorum reactors were detected in eight flocks for the season. This number is small compared to the total number (386) of flocks tested. However, it is hoped that in the not too distant future no infected flocks will be found. It is encouraging that, of the total birds tested, 96.16 percent were found in 100-percent tested nonreacting flocks.

The laboratory appreciates the fine cooperation of the majority of flock owners in striving towards a common objective, the eradication of pullorum disease. The cooperation of the flock owner is, of course, a primary essential in the eradication of the disease. It is hoped that all flock owners and other agencies will continue with earnest desire and concerted effort to eliminate the disease completely from Massachusetts flocks.

We also wish to express our appreciation for the splendid cooperation received from the Extension Service, Massachusetts Department of Agriculture, and other agencies.

SUMMARY OF SERVICE RENDERED

Flocks tested.....	386
Chicken.....	311
Turkey.....	51
Pheasant.....	24
Number of tests.....	1,204,232
Chickens:	
Routine.....	1,123,498
Experimental.....	46,324
Fowl other than chickens:	
Routine.....	34,348
Experimental.....	62
Owners receiving necropsy service.....	35
Necropsies of reacting birds.....	65
Fowl Typhoid Tests:	
Number of flocks.....	13
Number of tests.....	10,912
Number of positive tests.....	94

Table 1. Distribution of Tests and Reactors by Counties and by Breeds

Breeds	Barnstable	Berkshire	Bristol	Essex	Franklin	Hampden	Hampshire	Middlesex	Norfolk	Plymouth	Worcester	Totals	Percent
Rhode Island Reds													
Total tests.....	7,802	837	50,332	90,467	7,928	9,722	7,083	50,623	57,954	22,187	63,143	298,078	0.31
Positive tests.....	0	0	822	0	0	0	0	96	0	0	0	918	
New Hampshires													
Total tests.....	20,236		18,329	43,919				26,875	3,017	38,109	2,125	152,610	0.02
Positive tests.....	0		0	37				0	0	0	0	37	
Barred Plymouth Rocks													
Total tests.....	1,237	4,372	39,154	9,974	11,225	1,180	2,030	58,235	19,545	45,808	44,148	236,908	0.22
Positive tests.....	0	0	80	0	0	0	0	351	0	0	92	523	
White Plymouth Rocks													
Total tests.....	85	5,644	17,465	72,190	3,802	4,898	20,777	101,221	9,472	45,874	31,169	312,595	0.002
Positive tests.....	0	0	5	0	0	0	0	0	0	0	0	5	
White Leghorns													
Total tests.....		18,096	731	7,411	720	1,011	8,341	1,300	29,740	3,894	3,774	75,018	0.00
Positive tests.....		0	0	0	0	0	0	0	0	0	0	0	
Miscellaneous													
Total tests.....	2,779	41	12,774	26,350	1,489	1,883	1,750	7,228	10,673	19,306	9,964	94,613	0.001
Positive tests.....	0	0	0	0	0	0	0	1	0	0	0	1	
Total Tests.....	32,137	29,366	138,785	180,311	25,164	18,694	39,981	245,482	130,401	175,178	154,323	1,169,822	
Positive tests													
Number.....	0	0	907	37	0	0	0	448	0	0	92	1,484	
Percent.....	0.00	0.00	0.65	0.02	0.00	0.00	0.00	0.18	0.00	0.00	0.06	0.13	

DISTRIBUTION OF TESTS AND REACTORS

A total of 1,169,822 chicken samples from 11 counties was tested, and the percentage of positive tests was 0.13. No reactors were detected in seven counties. Also, the White Leghorns tested revealed no reactors. Middlesex, Essex, Plymouth, and Worcester led in the number of samples tested.

The following breeds were tested: Australorp, Bantam, Barred Plymouth Rock, Brahma, Columbian, Cornish, Crosses, Delaware, New Hampshire, Rhode Island Red, White American, White Leghorn, White Plymouth Rock, White Wyandotte.

The White Plymouth Rock, Rhode Island Red, Barred Plymouth Rock, New Hampshire, and White Leghorn were the predominating breeds tested. The number of tests for Barred Plymouth Rock and White Leghorn breeds increased slightly, whereas the number of tests for the Rhode Island Red, New Hampshire, and White Plymouth Rock breeds decreased slightly. Of the total samples tested, 26.72 percent were taken from White Plymouth Rock, 25.48 percent from Rhode Island Red, 20.25 percent from Barred Plymouth Rock, 13.05 percent from New Hampshire, and the remainder from other breeds tested. Of the 1,064,832 samples collected from females, 25,418 were from hens and 1,039,414 from pullets, with 0.92 and 0.11 percent reactors, respectively. Among the 104,990 samples collected from males, 0.07 percent were positive.

ANNUAL TESTING OF FLOCKS

Table 2 lists the results from flocks tested (1) for the first time, (2) intermittently, (3) for two consecutive years, and (4) for three or more consecutive years.

In the group tested for the first time, no reactors were detected. Fewer flocks and birds were tested in this group than during the previous season. The average number of birds to a flock in this group was 1,236.

In the intermittent group the percentage of reactors was the highest for the four groups. All the reactors were identified in one flock. The number of birds tested in this group was slightly greater than in the previous season. The average number of birds to a flock was 3,380.

In the two-year group all the reactors were identified in one flock. The number of birds tested in this group was considerably less than in the previous year. The

Table 2. Annual Testing Versus Single and Intermittent Testing

Classification	Flocks	Birds	Total Tests	Positive Tests		Negative Flocks		Positive Flocks	
				Number	Percent	100 Percent Tested	Partially Tested	100 Percent Tested	Partially Tested
Tested for the first time.....	21	25,953	25,953	0	0.00	11	—	—	—
Intermittent testing.....	15	50,700	51,586	530	1.03	11	—	—	—
Two consecutive years.....	26	47,183	50,760	149	0.29	25	—	1	—
Three or more consecutive years	249	977,707	1,041,523	805	0.08	41	15	—	—
TOTALS.....	311	1,101,543	1,169,822	1,484	0.13	288	15	5	—

average number of tested birds per flock was 1.815 which is much less than the average in the previous season.

In the group tested for three or more consecutive years, there were 249 flocks, representing 1,011,523 tests of which 0.03 percent were positive. Three flocks were classified as infected. One flock had revealed infection the previous two years. In the other two flocks the infection constituted a "break" of unknown origin. One of these flocks had to be sold because of the economic hardship caused by the infection. The average number of birds per flock in this group was 3,927.

For all the four groups, 311 flocks were tested, representing 1,101,543 birds and 1,169,822 samples, of which 0.13 were positive. The 233 flocks that were 100 percent tested and nonreacting contained 1,059,257 birds or 96.16 percent of the total birds tested. Five flocks were classified as positive. The percentage of reactors among these birds was 8.36.

During the past year, 63 or 18.64 percent of the flocks tested in 1953-54 were not tested. Annual testing of flocks is necessary to determine the pullorum status of flocks. If flock owners find it necessary to omit testing for a year or more, they should procure replacement stock from officially recognized pullorum-passed and pullorum-clean flocks. Adequate precautions should be taken against the introduction of infection.

APPEARANCE OF INFECTION IN FLOCKS PREVIOUSLY NEGATIVE

During the past year pullorum "breaks" were observed in five flocks, a slight increase over the previous season. Three of the flocks had more than 0.5 percent reactors on the first test. In two flocks the stock was received from the same hatchery, and it is possible that a common source of infection was responsible for these two "breaks." In two flocks inadequate preventive measures were considered as the explanation for the "breaks." In the fifth flock, infection had been detected the previous year, but the flock had fulfilled the requirements to meet the pullorum-clean grade, but apparently the infection had not been eliminated completely from the flock. In table 3 is given the incidence of "breaks" among Massachusetts tested flocks during the past 15 years.

Flock owners should be reminded that precautions frequently violated are (1) the purchase of questionable stock, (2) hatching from pullets before they are tested, (3) hatching of chicks or poults at a hatchery of unknown pullorum status.

Flock owners and hatcherymen should constantly observe strictest vigilance against the introduction and spread of the disease.

The following measures have been found to be effective in establishing and maintaining a pullorum-free flock:

1. All the birds on the premises should be tested each year.
2. If infection is present, the entire flock should be retested within four to six weeks until a negative report is obtained, provided the value of the birds justifies the expenditure.
3. Every reactor, regardless of its value, should be removed from the premises and sold for slaughter immediately upon receipt of the report.
4. Offal from all birds dressed for market or for home consumption as well as dead birds that are not fit for consumption should be burned.

Table 3. The Incidence of "Breaks" Observed During the Past Sixteen Years

Year	Number of Flocks	Breaks		Flocks with 100-1000 0.5 Percent Infection on First Test	
		Number	Percent	Number	Percent
1940	266	9	2.25	2	33.33
1941	251	5	1.99	4	80.00
1942	255	6	2.35	3	50.00
1943	286	13	4.54	8	61.54
1944	259	17	5.88	13	76.47
1945	340	21	6.18	17	80.95
1946	388	20	5.15	14	70.00
1947	440	17	3.95	9	52.94
1948	425	16	3.76	13	81.25
1949	386	6	1.55	3	50.00
1950	383	18	4.70	16	88.88
1951	381	6	1.57	6	100.00
1952	360	8	2.22	5	62.50
1953	316	7	2.22	4	57.14
1954	291	2	0.69	2	100.00
1955	275	5	1.82	2	40.00

5. The poultry houses, runs, and equipment should be thoroughly cleaned and disinfected immediately after removal of reactors. An empty pen to each house should be provided to facilitate cleaning and disinfection during the winter months. Disinfectants approved by the United States Department of Agriculture should be used.

6. Birds removed from the premises to egg-laying contests, exhibitions, etc., should be held in quarantine and determined free of disease before they are readmitted into the flock.

7. Purchase of stock in the form of adults, chicks, and eggs should be from known pullorum disease-free flocks. The Massachusetts Department of Agriculture, 41 Tremont Street, Boston, should be consulted regarding additions or replacements in the flock.

8. Eggs should not be saved for hatching until after a flock has been tested and all the infected birds removed. Early pullet testing will permit early hatching.

9. Fresh and infertile eggs from unknown or infected sources should not be fed to chickens or exposed to birds or animals, such as crows, sparrows, and skunks, that may carry or spread the infection.

10. Poultrymen should not custom-hatch for untested or infected flocks (including fowl other than chickens).

11. Owners of pullorum disease-free flocks should not permit hatching where infected eggs or stock may be found.

12. Poultrymen should not buy feed in bags that have been used or exposed to infection. (Such bags if properly disinfected will be safe for further use.)

13. Poultrymen should regard fowl other than chickens as a possible source of pullorum infection unless tested and found free from pullorum disease.

14. Poultrymen should not use equipment that has been exposed to or contaminated with infective material unless it is properly cleaned and sterilized or disinfected.

TESTING OF FOWL OTHER THAN CHICKENS

During the past year, 34,410 samples from fowl other than chickens, including 25,879 turkeys, 6,758 pheasants, 1,334 quail, 256 partridge, 113 geese, 68 ducks, and 2 guinea fowl were tested. No reactors were detected.

NONREACTING AND POSITIVE FLOCKS CLASSIFIED BY COUNTIES

A total of 306 nonreacting flocks, representing 1,085,449 birds, was identified in 11 counties as listed in table 4. A total of 288 flocks was 100-percent tested, whereas 18 flocks were partially tested. The latter group constituted 26,192 birds located in seven counties. Partial testing is not recommended to determine the true status of the flock. It is gratifying to note that 96.16 percent of all birds tested are in 100-percent nonreacting flocks, and it is hoped that eventually all flocks will be 100-percent tested.

Five flocks, representing 16,094 birds, were classified as positive in two counties at the close of the season. One of these flocks has been sold, three are in the process of being retested, and the fifth flock has not been enrolled in an immediate eradication program.

To further the eradication of pullorum disease the infection should be eliminated either through partial or complete depopulation of the flocks, and, if that is not feasible, the infection should be eliminated through testing. Infected flocks may serve as sources of infection for other flocks; therefore, every known focus of infection should be eliminated without unnecessary delay.

Table 4. Nonreacting and Positive Flocks Classified by Counties

County	100-Percent Tested		Partially Tested		Totals	
	Flocks	Birds	Flocks	Birds	Flocks	Birds
Nonreacting Flocks						
Barnstable...	4	32,137	—	—	4	32,137
Berkshire.....	7	28,790	1	576	8	29,366
Bristol.....	36	111,819	6	7,249	42	119,068
Essex.....	40	168,662	2	1,140	42	169,802
Franklin	12	25,164	—	—	12	25,164
Hampden...	11	18,694	—	—	11	18,694
Hampshire...	15	39,981	—	—	15	39,981
Middlesex...	54	193,639	2	10,732	56	204,371
Norfolk.....	26	130,005	1	396	27	130,401
Plymouth....	46	170,981	4	2,241	50	173,222
Worcester....	37	139,385	2	3,858	39	143,243
Totals...	288	1,059,257	18	26,192	306	1,085,449
Positive Flocks						
Bristol.....	3	10,693	—	—	3	10,693
Middlesex....	2	5,401	—	—	2	5,401
Totals...	5	16,094	—	—	5	16,094

COMPARISON OF 1953-54 AND 1954-55 TESTING

The testing data for the two seasons are listed in table 5. Fewer flocks, birds, and samples were tested in 1954-55 than in 1953-54. These decreases are attributed largely to economic conditions that confronted the industry. The percentage increase of reactors from 0.004 to 0.13 was largely due to a few flocks that revealed a high percentage of reactors.

In comparing the results of the two seasons it might be concluded that little or no progress was made in the eradication of the disease this past year. However, although there have been setbacks in some areas of the testing work, the over-all picture is still very encouraging regarding the elimination of the disease. Every flock owner, hatcheryman, or anyone associated with the industry should support fully the program that has as its goal complete elimination of the disease.

Table 5. Comparison of 1953-54 and 1954-55 Testing

County	Flocks	Birds	Tests	Positive Tests Percent	Non- reacting Flocks
1953-54 Season					
Barnstable.....	5	25,550	25,550	0.00	5
Berkshire.....	10	51,707	51,707	0.00	10
Bristol.....	44	147,902	148,990	0.00	44
Essex.....	53	201,822	207,140	0.007	53
Franklin.....	15	32,514	34,434	0.006	14
Hampden.....	12	18,409	18,409	0.00	12
Hampshire.....	17	36,427	36,427	0.00	17
Middlesex.....	58	210,009	215,640	0.02	57
Norfolk.....	28	119,813	119,813	0.00	28
Plymouth.....	53	180,461	183,573	0.002	52
Worcester.....	43	153,476	153,476	0.00	43
Totals.....	338	1,178,090	1,195,159	0.004	335
1954-55 Season					
Barnstable.....	4	32,137	32,137	0.00	4
Berkshire.....	8	29,366	29,366	0.00	8
Bristol.....	45	129,761	138,785	0.65	42
Essex.....	42	169,802	180,311	0.02	42
Franklin.....	12	25,164	25,164	0.00	12
Hampden.....	11	18,694	18,694	0.00	11
Hampshire.....	15	39,981	39,981	0.00	15
Middlesex.....	58	209,772	245,482	0.18	56
Norfolk.....	27	130,401	130,401	0.00	27
Plymouth.....	50	173,222	175,178	0.00	50
Worcester.....	39	143,243	154,323	0.06	39
Totals.....	311	1,101,543	1,169,822	0.13	306

THIRTY-FIVE-YEAR PULLORUM DISEASE TESTING SUMMARY

A summary of testing results for thirty-five years of testing is listed in table 6. The results reveal that progress is being made in the reduction of pullorum disease even though this past year there has been a slight increase in the percentage of reactors. It is hoped that in future years the percentage of infection will follow a downward trend.

Table 6. Thirty-Five-Year Pullorum Disease Testing Summary

Season	Flocks	Birds	Total Tests	Positive Tests Percent	Non-reacting Flocks	Birds in Non-reacting Flocks	
						Number	Percent
1920-21.....	108	24,718	24,718	12.50	25	2,414	9.77
1921-22.....	110	29,875	29,875	12.65	27	4,032	13.50
1922-23.....	121	33,602	33,602	7.60	29	5,400	16.07
1923-24.....	139	59,635	59,635	6.53	38	11,082	18.58
1924-25.....	156	66,503	66,503	2.94	79	25,390	38.18
1925-26.....	201	67,919	67,919	2.31	124	33,615	49.49
1926-27.....	249	127,327	127,327	4.03	114	40,269	31.63
1927-28.....	321	190,658	232,091	5.35	138	80,829	42.39
1928-29.....	413	254,512	304,092	3.56	228	153,334	60.25
1929-30.....	460	331,314	386,098	2.17	309	203,038	66.97
1930-31.....	447	356,810	402,983	1.47	328	267,229	74.89
1931-32.....	455	377,191	420,861	0.90	355	298,534	79.15
1932-33.....	335	296,093	300,714	0.47	276	238,074	80.41
1933-34.....	262	263,241	284,848	0.53	229	212,782	80.83
1934-35.....	244	281,124	301,887	0.39	213	251,778	89.56
1935-36.....	252	329,659	344,081	0.30	230	315,215	95.95
1936-37.....	307	448,519	561,762	0.37	281	424,431	94.63
1937-38.....	308	480,227	497,769	0.17	286	457,466	95.26
1938-39.....	355	571,065	615,205	0.34	327	469,134	82.15
1939-40.....	346	573,000	673,222	0.51	332	497,356	86.80
1940-41.....	309	527,328	538,589	0.09	299	492,475	93.39
1941-42.....	366	653,080	662,715	0.27	350	591,628	90.59
1942-43.....	332	637,666	649,137	0.48	317	600,607	94.19
1943-44.....	413	762,066	791,596	0.11	386	721,229	94.64
1944-45.....	458	836,481	943,987	0.12	431	792,551	94.75
1945-46.....	538	1,125,737	1,225,594	0.12	513	1,085,726	96.45
1946-47.....	562	1,156,147	1,238,983	0.13	534	1,112,043	96.19
1947-48.....	494	1,219,957	1,272,547	0.10	476	1,185,852	97.20
1948-49.....	458	1,179,481	1,213,073	0.04	452	1,171,363	99.31
1949-50.....	475	1,360,865	1,444,364	0.06	465	1,344,860	98.82
1950-51.....	448	1,358,540	1,394,192	0.05	442	1,339,068	98.57
1951-52.....	417	1,343,955	1,370,430	0.016	412	1,324,195	98.53
1952-53.....	371	1,155,359	1,168,739	0.04	366	1,146,932	99.27
1953-54.....	338	1,178,090	1,195,159	0.004	335	1,170,936	99.39
1954-55.....	311	1,101,543	1,169,822	0.13	306	1,085,449	98.54

COMMENTS AND SUGGESTIONS

Annual Testing of All Birds on the Premises: During the past year 18 flocks were partially tested, and none revealed reactors among the tested birds. It is quite possible that these results represented the true pullorum status of these flocks; however, one cannot be certain without testing all the birds on the premises.

To obtain maximum safety in determining the true pullorum status of a flock all birds on the premises should be tested each year.

It should be emphasized again that birds should not be used for breeding purposes until they have been tested and found free of pullorum disease. Some poultrymen in the past have used untested birds to supply hatching eggs during the spring, summer, and fall months for broiler production. Flock owners whose flocks are officially classified as pullorum-passed or pullorum-clean are not permitted to sell hatching eggs or chicks from untested birds for either broiler production or for replacement stock. Each flock owner selling hatching eggs or baby chicks should exercise every means to determine that his breeding flock is free of the disease.

Filing Applications for Testing: At the beginning of each season, flock owners who received testing service the previous season are sent application cards for the next year's work. Flock owners frequently delay returning these cards and in many instances do not return them at all but attempt to make arrangements for testing by letter or telephone. It is impossible to conduct an efficient service if the laboratory is not informed in ample time about the testing demands. This information is necessary to determine the needs for the testing service and to carry out the routing expeditiously and economically. All flock owners have been notified that the laboratory will follow the policy of processing the applications in the order received. Furthermore, flock owners must recognize that the testing load has to be distributed over several months instead of two or three months because it is practically impossible to employ personnel for only a few months. Flocks should be tested as soon as the birds are five months of age, if the laboratory is in a position to do so. The following summary gives the distribution of tests by months:

Months	Number of Tests	Months	Number of Tests
April, 1954	58,640	November, 1954	166,940
May	44,283	December	142,162
June	43,361	January, 1955.....	98,578
July	75,246	February	72,196
August	91,238	March	56,173
September.....	156,216	April,	1,654
October	197,545		
		Total	1,204,232

Expansion in Efforts toward Pullorum Disease Eradication: Testing data in this bulletin reveal that present methods of control and eradication have been successful in reducing infection to a very small amount. To obtain further progress it appears quite evident that certain changes should be adopted to make our present program more effective. The following recommendations to expand our efforts in pullorum disease eradication have been approved by the Massachusetts Federation of Poultry Associations.

I. Handling of flocks with acute outbreaks:

A. Affected chicks should be destroyed or reared for broilers. If early liquidation is not possible, then infection should be eliminated through short interval retesting.

B. In adult flocks affected birds should be sold promptly. This may prevent further spread to other groups in the flock. The balance of the flock

should be tested two to three weeks after the disposal of the affected pen or pens, followed by short interval retesting until the infection has been eliminated.

C. The use of drugs in an acute outbreak should be exercised only upon recommendation by competent persons.

II. Handling of infected tested breeding flocks:

A. Flock owners desiring official recognition are compelled to eradicate the disease from their flocks.

B. Infected breeding flocks whose owners do not wish to receive official recognition should be subjected to a planned eradication program.

III. Specific sanitary and control measures:

A. Upon identification of infection, effective plans should be applied regarding movement and sale of stock.

1. Infected semimature and mature flocks when sold should be slaughtered.

2. Reactors should be removed and sold for slaughter as soon as possible.

3. Immediately upon detection of infection in breeder and commercial hatcheries, effective plans should be instituted to prevent the further spread of the disease.

B. Sanitary conditions consistent with a sound eradication program should be maintained on all contaminated premises.

C. Only flocks that meet the qualifications of the pullorum-passed and pullorum-clean grades should be permitted to produce hatching eggs.

D. Purchase of pullorum-clean stock should be more widely advocated.

E. All birds entered in shows and contests should be free of pullorum disease as determined by the agglutination test.

F. Regulatory aid should be requested for flock owners refusing to cooperate on a voluntary basis.

G. Testing of infected flocks should be done on a free basis by an official state agent.

H. An extensive educational program should be a vital part of the eradication campaign.

Inspection of Commercial Fertilizers and Agricultural Lime Products

BY

Fertilizer Control Service Staff

Massachusetts Agricultural Experiment Station

- May 15, 1956 -



This is the eighty-second report of the Massachusetts Fertilizer Control made in accordance with Chapter 94, Sections 250 to 261, inclusive, of Massachusetts General Laws 1920, as amended by Chapter 67, Acts of 1933.

INSPECTION OF COMMERCIAL FERTILIZERS AND AGRICULTURAL LIME PRODUCTS FOR THE SEASON OF 1955

BY FERTILIZER CONTROL SERVICE STAFF

John W. Kuzmeski, *Research Professor, Official Chemist*
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Joseph Conklin, *Inspector*
Edward F. Vlach, *Technical Assistant*
Cora B. Grover, *Principal Clerk*

PERTINENT FACTS RELATING TO MASSACHUSETTS FERTILIZER LAW

Commercial Fertilizers

Registration is required annually on January 1.

Registration fee is \$8 for each element: nitrogen, phosphoric acid, potash, and magnesia.

Label must show:

Net weight of fertilizer

Name, brand or trade mark, and grade

Name and address of manufacturer

Guaranteed analysis: nitrogen, available phosphoric acid, water soluble potash. A guarantee of total phosphoric acid may be used instead of available phosphoric acid for bone, untreated phosphate rock, tankage, dried and pulverized manures, ground seeds, and wood ashes.

Tonnage reports are required semiannually, on January 1 and July 1.

Tonnage fee: 6 cents per ton of 2,000 pounds

Lime Products

Registration is required annually on January 1.

Registration fee: \$12 for each brand.

Label must show:

Net weight of product

Name, brand or trade mark, and form of lime

Name and address of manufacturer

Guaranteed analysis: calcium oxide, magnesium oxide, carbonates of calcium and magnesium, or calcium sulfate (in gypsum or land plaster)

Make checks payable to Massachusetts Agricultural Experiment Station and send correspondence to

JOHN W. KUZMESKI
Massachusetts Agricultural Experiment Station
Amherst, Mass.

REGULATIONS GOVERNING THE CUSTOM APPLICATION OF LIQUID FERTILIZERS

Because it is the practice of fuel oil dealers and others to apply liquid lawn and other fertilizers on a custom service basis, the Massachusetts Fertilizer Control Service has adopted the following regulations covering such applications.

1. The concentrated fertilizer used in making the diluted solution shall be registered.
2. The volume of diluted solution applied shall be measured in terms of gallons by a meter approved by the Director, Massachusetts Division of Standards.
3. The operator of the tank truck or other vehicle container used for transporting the diluted solution shall have with him at all times a statement giving:
 - a. The brand name and grade of fertilizer used in making the diluted solution.
 - b. The dilution used. (..... pounds of fertilizer in gallons of water.)
4. Each purchaser of the diluted solution shall be given a delivery ticket stating:
 - a. The name and address of seller.
 - b. The name and address of buyer.
 - c. Date of application.
 - d. The total amount of concentrated fertilizer and diluted solution applied. pounds of (brand and grade) fertilizer in.....gallons of water.
 - e. Total area sprayed: square feet.
5. The tank truck operator, at the request of any purchaser, shall fill two 1-pint jars with the diluted solution as it is being applied. The purchaser may send one tightly sealed jar to the Fertilizer Control Service for analysis. The other jar shall be retained by the tank truck operator. Each jar shall have a copy of the delivery ticket attached.
6. All other provisions of the Massachusetts Fertilizer Law regarding the sale of fertilizers, the keeping of tonnage records, etc., shall be observed by the person registering the concentrated fertilizers.

FERTILIZER TONNAGE

Tonnage of Fertilizer Sold in Massachusetts

	1953		1954	
	Jan. 1 to July 1	Jan. 1 to Dec. 31	Jan. 1 to July 1	July 1 to Dec. 31
Mixed fertilizers	58,546	10,106	58,992	10,362
Fertilizer chemicals and materials unmixed	10,358	3,969	10,013	4,993]
Pulverized animal manures	1,644	336	1,526	430
Totals	70,548	14,411	70,531	15,785

Tonnage of Mixed Fertilizers, January 1 to December 31, 1954

Grade*	Tonnage		Brands	Grade*	Tonnage		Brands
	Jan. 1 to July 1	July 1 to Dec. 31			Jan. 1 to July 1	July 1 to Dec. 31	
5-10-10	14,855	2,326	28	0-14-14	470	78	9
6-3-6	8,527	171	12	0-10-20	427	329	8
5-8-7	6,375	465	20	0-15-30	421	240	—
7-7-7	4,817	1,013	16	3-12-12	402	144	—
5-10-5	4,656	505	30	4-12-16	339	152	—
10-10-10	3,448	1,023	10	10-6-4	300	37	7
8-16-16	3,138	1,189	12	0-12-24	297	263	—
6-8-8	1,205	9	8	5-5-15	157	—	—
8-8-8	1,022	5	7	6-12-6	104	1	—
8-6-4	908	269	5	15-30-15	31	3	—
8-6-2	645	169	8	20-20-20	17	4	5
0-20-20	594	434	8	Miscellaneous	4,842	1,334	—
4-12-4	504	17	—				
6-10-4	491	182	8	Totals	58,992	10,362	307

*The grade represents the plant food guarantee and is expressed in the order of nitrogen, available phosphoric acid, and potash.

Tonnage of Unmixed Materials, January 1 to December 31, 1954

Material	Tonnage		Brands
	Jan 1 to July 1	July 1 to Dec. 31	
Process tankage and activated sewage	2,845	1,491	15
Superphosphate	2,437	2,219	12
Pulverized animal manures	1,526	430	32
Nitrate of soda	921	259	—
Ammonium nitrate	907	287	—
Cottonseed meal	795	—	—
Castor pomace	569	134	6
Bone meal	557	222	15
Muriate of potash	346	151	9
Rock phosphate	207	152	—
Cyanamid	184	27	—
Sulfate of ammonia	57	—	8
Miscellaneous	188	51	—
Totals	11,539	5,423	131

MIXED FERTILIZERS

Deficiency Statistics for Mixed Fertilizers

Manufacturer	Number of Samples		Number of Tests				
	Analyzed	With No. Deficiencies	Totals	Less than $\frac{1}{4}$ Per Cent Below Guarantee	Between $\frac{1}{4}$ and $\frac{1}{2}$ Per Cent Below Guarantee	Between $\frac{1}{2}$ and $\frac{3}{4}$ Per Cent Below Guarantee	More than $\frac{3}{4}$ Per Cent Below Guarantee
American Agricultural Chemical Co....	55	45	165	3	5	2	0
American Chemical Paint Co.....	1	1	3	0	0	0	0
Apothecaries Hall Co.....	24	21	74	1	2	0	2
Armour Fertilizer Works.....	20	14	60	2	0	2	2
F. A. Bartlett Tree Expert Co.....	1	1	3	0	0	0	0
Joseph Breck & Sons Corp.....	3	2	10	1	0	0	0
California Spray-Chemical Corp.....	3	3	9	0	0	0	0
Carac Corp.....	1	0	3	0	0	0	1
J. J. Chesnicka Landscape Service.....	1	1	3	0	0	0	0
Clinton Nurseries.....	2	2	6	0	1	0	0
Consolidated Rendering Co.....	31	19	86	2	6	1	5
Davison Chemical Co.....	8	4	23	0	4	0	1
Eastern States Farmers' Exchange, Inc.	19	13	67	1	2	2	1
Essex County Cooperative Farming Association.....	4	4	14	0	0	0	0
Faesy & Besthoff, Inc.....	4	3	12	0	1	0	0
Farm Bureau Assn.....	7	7	24	0	0	0	0
Fertilene Corp.....	5	0	15	2	1	0	2
Forward House Div., Olin Mathieson Chemical Corp.....	1	1	3	0	0	0	0
Garden Research Laboratories.....	1	0	4	0	1	0	0
Garfield Williamson, Inc.....	1	1	3	0	0	0	0
Goulard & Olen, Inc.....	6	3	18	1	1	0	1
C. L. Halvorson Tree Service.....	1	0	3	0	0	1	0
Heller Greenhouse Laboratories.....	1	0	3	0	0	0	1
A. H. Hoffman, Inc.....	2	2	6	0	0	0	0
Hydroponic Chemical Co., Inc.....	1	1	3	0	0	0	0
Hy-Trous Corp.....	1	1	3	0	0	0	0
International Minerals & Chemical Corp.....	30	23	112	1	5	0	1
Lebanon Chemical Corp.....	2	0	6	0	1	1	2
Lexington Gardens, Inc.....	1	1	3	0	0	0	0
Liquid Fertilizer Corp. of America.....	4	4	12	0	0	0	0
Liquilawn, Inc.....	2	2	6	0	0	0	0
Loamium Company of America.....	3	2	9	0	1	0	0
John D. Lyon, Inc.....	1	1	3	0	0	0	0
Monsanto Chemical Co.....	2	2	6	0	0	0	0
Old Deerfield Fertilizer Co., Inc.....	31	30	97	0	1	0	0
Old Fox Agricultural Sales, Inc.....	11	7	33	3	0	0	1
Olds & Whipple, Inc.....	10	10	30	0	0	0	0
Pedigreed Seed Co.....	2	1	6	1	0	0	0
Penn Co.....	1	1	3	0	0	0	0
Plantabbs Corp.....	1	1	3	0	0	0	0
Ra-Pid-Gro Corp.....	1	0	3	0	0	1	1
Rogers & Hubbard Co.....	24	20	71	0	2	1	2
Rose Manufacturing Co.....	1	1	3	0	0	0	0
O. M. Scott & Sons Co.....	3	2	9	0	0	0	1
Sears, Roebuck & Co.....	8	5	24	1	1	1	0
Smith Equipment & Supply Co.....	1	0	3	1	0	0	0
Stimulant Laboratories Co.....	1	1	3	0	0	0	0
Super Lawn Corp.....	5	4	15	1	0	0	0
Swift & Co. Plant Food Division.....	14	11	42	0	0	2	1
Universal Chemical Co.....	1	1	3	0	0	0	0
Valley Feed & Supply Co., Inc.....	1	1	3	0	0	0	0
Virilium Corp.....	5	5	15	0	0	0	0
Winslow Nurseries, Inc.....	2	2	6	0	0	0	0
Woodruff Fertilizer Works, Inc.....	1	1	3	0	0	0	0
Totals.....	373	288	1,155	21	35	14	25

EXPLANATION OF TABLE OF ANALYSES

Guarantee. The plant food guarantee or the grade of each fertilizer is made a part of the trade name under the heading "Name of Manufacturer and Brand" and is expressed as nitrogen, available phosphoric acid, and water soluble potash in that order.

Mixtures Substantially Complying with the Guarantee. In addition to those fertilizers that meet their guarantees in every respect, this table includes also a list of those mixtures that have one or more elements below the guaranteed percentage but have a shortage of less than \$1 per ton.

This table, in addition to the data mentioned in the next paragraph, contains only results of analytical tests pertaining to the average amount of water insoluble nitrogen present in some brands, since this information is of value to tobacco growers and other users of fertilizers containing a high percentage of this form of nitrogen.

Potash Forms. Tests for chlorine are made only on tobacco mixtures and on those fertilizers that carry a guarantee of potash in forms other than muriate. When the amount of chlorine present in any brand exceeds the tolerance allowed for that brand, this fact is indicated by a footnote.

Mixtures Showing a Commercial Shortage of \$1 or More per Ton

Manufacturer and Brand	Nitrogen Found		Available Phosphoric Acid Found	Water Soluble Potash (K ₂ O) Found	Approximate Commercial Shortage per Ton
	Water Insoluble Organic	Total			
Apothecaries Hall Co. Liberty 8-16-16.....	—	7.62	14.78	15.70	\$4.24
Armour Fertilizer Works Armour's Big Crop 8-16-16...	—	8.00	15.27	16.00	1.62
Consolidated Rendering Co. Corenco Legume Special 0-20-20 (a).....	—	—	17.97	20.00	2.12
Corenco 8-16-16 Two in One (a)	—	7.74	16.10	15.40	1.12
Corenco 10-10-10 (a).....	—	9.62	10.10	9.60	1.54
Davison Chemical Corp. 7-7-7 Davco Granulated.....	—	6.74	7.30	6.20	1.23
Fertiline Corp. of America Fertiline 15-10-5 (a).....	—	15.74	7.63	4.83	16.22
Heller Greenhouse Laboratories Heller-Gro 15-15-15.....	—	15.20	13.13	15.54	*
Lebanon Chemical Corp. Plant Food 5-10-5.....	—	4.59	9.45	6.15	1.76
Hi-Organic 8-8-8.....	1.13	7.04	5.74	13.50	(b)
Rogers & Hubbard Co. Hubbard Double Strength 8-16-16		8.08	15.11	16.05	1.67

a See table of "Mixtures substantially complying with guarantees."

b Seriously unbalanced, although not deficient in monetary value.

* Since this material is sold in small packages, a calculation of the shortage per ton is not feasible. Deficiency found is great enough for inclusion of this material with seriously deficient brands.

Mixtures Substantially Complying with Guarantees

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
American Agricultural Chemical Co.		
AA Quality 0-10-20.....	1	—
AA Quality 0-14-14.....	1	—
AA Quality 4-12-16.....	1	—
AA Quality 5-8-7.....	3	—
AA Quality 5-8-10.....	3	—
AA Quality 5-10-5.....	2	—
AA Quality 5-10-10.....	2	—
AA Quality 6-8-8.....	2	—
AA Quality 7-7-7.....	2	—
AA Quality 8-8-8.....	2	—
AA Quality 8-16-16.....	1	—
AA Quality 10-10-10.....	1	—
Agrico Phosphate & Potash 0-10-20.....	2	—
Agrico Phosphate & Potash 0-14-14.....	1	—
Agrico for Seeding Down 3-12-12.....	1	—
Agrico for Corn 4-12-8.....	2	—
Agrico for New England 5-8-7.....	3	—
Agrico Bulb Food 5-9-6.....	1	1.65
Agrico Rose Food 5-9-6.....	1	1.69
Agrico for Cranberries 5-10-5.....	2	—
Agrico for Onions 5-10-5.....	2	—
Agrico for Truck 5-10-5.....	1	—
Agrico for Potatoes 5-10-10, 2% magnesium oxide.....	3	—
Agrico for Tobacco 6-3-6.....	3 <i>a</i>	2.75
Agrico for Turf 6-8-2.....	3	2.60
Agrico for Broadleaf Evergreens 6-10-4.....	1	.69
Agrico Country Club 6-10-4.....	1	.39
Agrico for Lawns Trees and Shrubs 6-10-4.....	1	.56
Agrico for Cranberries 7-7-7.....	1	—
Agrico for Top Dressing 7-7-7.....	3	—
Agrico Country Club 8-6-4.....	1	1.34
Agrico for Top Dressing 10-10-10.....	1	—
American Chemical Paint Co.		
Gro-Stuf 20-20-20.....	1	—
Apothecaries Hall Co.		
Liberty 0-20-20.....	1	—
Liberty Tobacco Starter 4-10-0.....	1	.61
Liberty Tobacco 5-5-15.....	1 <i>a</i>	—
Liberty High Grade Market Gardeners 5-8-7.....	2	—
Liberty 5-10-5.....	1	—
Liberty 5-10-10.....	3	—
Liberty 5-10-10, 2% magnesium oxide.....	1	—
Liberty Tobacco Mixture 6-3-6.....	2 <i>a</i>	2.79
Liberty Tobacco Mixture 6-3-6, 2% magnesium oxide.....	2 <i>a</i>	2.97
Liberty Fertilizer 6-8-8.....	2	—
Liberty 6-8-8, 2% magnesium oxide.....	2	—
Liberty Special for Fruit & Grass 7-7-7.....	2	—
Liberty Landscape & Golf Course 8-6-2.....	1	1.13
Liberty 8-8-8.....	1	—

a Potash is more than muriate.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Armour Fertilizer Works		
Armour's Big Crop 0-20-20.....	1	—
Armour's Big Crop 5-8-7.....	2	—
Armour's Big Crop 5-8-7, 2% magnesium oxide.....	1	—
Armour's Big Crop 5-10-5.....	1	—
Armour's Big Crop 5-10-10.....	1	—
Armour's Big Crop 5-10-10, 2% magnesium oxide.....	1	—
Armour's Big Crop 7-7-7.....	1	—
Armour's Big Crop 10-10-10.....	1	—
Armour's Gold Bond Tobacco Grower 6-3-6.....	2 <i>a</i>	2 59
Armour's Vertagreen Plant Food 5-10-5.....	2	—
Armour's Vertagreen Plant Food for Commercial Crops 6-12-6.....	1	—
Armour's Vertagreen Plant Food for Commercial Crops 6-12-12.....	2	—
Armour's Vertagreen Plant Food for Commercial Crops 8-8-8.....	1	—
Armour's Vertagreen Plant Food for Professional Use 10-6-4.....	1	1 34
F. A. Bartlett Tree Expert Co.		
Bartlett Green Tree Food 6-8-6.....	1	71
Joseph Breck & Sons Corp.		
Breck's Garden-Gro 5-10-10, 2% magnesium oxide.....	1	—
Breck's Turf-Gro 8-6-2.....	1	1 90
Breck's Quick-Lite 16-32-16.....	1	—
California Spray-Chemical Corp.		
Ortho-Gro Dry Fertilizer 7-9-5.....	1	6 42
Ortho Lawn Groom 7-11-5.....	1	1 52
Ortho-Gro Liquid Plant Food 10-5-5.....	1	—
Carac Corp.		
Carac Rose and Floral Plant Food 23-20-26.....	1	—
J. J. Chesnicka Landscape Service		
Chesnicka Sod Builder 9-7-4.....	1	—
Clinton Nurseries		
New Era African Violet Food 5-12-9.....	1	—
New Era Vitamin Plant Food 7-15-8.....	1	—
Consolidated Rendering Co.		
Corenco Hay & Pasture Special 0-10-20.....	1	—
Corenco Top Dresser 0-14-14.....	2	—
Corenco 0-20-20 Legume Special.....	1 <i>b</i>	—
Corenco 4-12-4 Complete Manure.....	2	—
Corenco 4-12-16 Ladino Special.....	1	—
Corenco Peerless Tobacco Grower 5-3-5.....	1 <i>a</i>	3 74
Corenco 5-5-15 Tobacco Starter.....	1	—
Corenco Potato & General Crop 5-8-7.....	1	—
Corenco Home Garden 5-10-5.....	2	—
Corenco 5-10-5 Onion Special—Super Truck.....	1	—
Corenco 5-10-5 Rose Special.....	1	1 13
Corenco Liquid Green 5-10-10.....	1	—

a Potash in forms other than muriate.

b See table of "Mixtures showing a commercial shortage of \$1 or more per ton."

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Corenco 5-10-10 Peerless Potato.....	1	—
Corenco 6-3-6 Premium Tobacco Grower.....	1 <i>a</i>	2.44
Corenco 6-8-8 Potato Special.....	1	—
Corenco Complete Fruit & Top Dressing 7-7-7.....	1	—
Corenco Landscape 8-6-4.....	2	.97
Corenco Turf Green 8-6-4.....	2	2.96
Corenco 8-16-16 Two-In-One.....	1 <i>b</i>	—
Corenco Liquid Green 10-5-5.....	1	—
Corenco 10-10-10.....	1 <i>b</i>	—
Davison Chemical Co.		
0-20-20 Davco Granulated.....	1	—
3-12-12 Davco Granulated.....	1	—
4-12-16 Davco Granulated.....	1	—
5-10-5 Davco Granulated.....	1	—
5-10-10 Davco Granulated.....	1	—
8-16-16 Davco Granulated.....	1	—
10-10-10 Davco Granulated.....	1	—
Eastern States Farmers' Exchange, Inc.		
Eastern States 0-15-30 with Boron 0.2%.....	2	—
Eastern States 0-20 20.....	2	—
Eastern States 5-10-10, 2% magnesium oxide.....	2	—
Eastern States 8-4-8 Tobacco, 2% magnesium oxide.....	2 <i>a</i>	3.00
Eastern States 8-12-12, 2% magnesium oxide.....	2	—
Eastern States 8-12-12 L. C., 2% magnesium oxide.....	1 <i>a</i>	—
Eastern States 8-16-16, 1% magnesium oxide.....	3	—
Eastern States 10-10-10, 1% magnesium oxide.....	3	—
Eastern States 10-10-10 SM, 2% water soluble magnesium oxide	1	—
Eastern States Starter 64 (16-32-16).....	1	—
Essex County Cooperative Farming Association		
S-X Brand 5-8-7.....	1	—
S-X Brand 5-10-10, 1% magnesium oxide.....	1	—
S-X Brand 5-10-10, 2% water soluble magnesium oxide.....	1	—
S-X Brand 7-7-7.....	1	—
Faesy & Besthoff, Inc.		
F & B Broadleaf High Organic 6-10-4.....	1	1.42
F & B Pelletized All-Purpose 6-12-6.....	1	1.26
F & B Rose Food 8-10-4.....	1	2.23
F & B 15-30-15 Starter-Grower All-Purpose.....	1	—
Farm Bureau Association		
Farm Bureau 4-16-20.....	1	—
Farm Bureau 5-8-7, 2% magnesium oxide.....	1	—
Farm Bureau 5-10-10.....	1	—
Farm Bureau 5-10-10, 2% magnesium oxide.....	1	—
Farm Bureau 7-7-7, 2% magnesium oxide.....	1	—
Farm Bureau 8-6-2.....	1	1.97
Farm Bureau 10-10-10.....	1	—

a Potash in forms other than muriate.*b* See table of "Mixtures showing a commercial shortage of \$1 or more per ton."

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Fertile Corporation of America		
Fertile 15-10-5.....	4 b	—
Forward House Div., Olin Mathieson Chemical Corp.		
Plantrons 12-24-12.....	1	—
Garden Research Laboratories		
RX-15 15-30-15, 0.816% magnesium oxide.....	1	—
Garfield Williamson, Inc.		
Plantspur 4-4-2.....	1	86
Goulard & Olen, Inc.		
G & O Tomato Food 3-12-13.....	1	.75
G & O Rhodo Azalea Camellia Food 3-20-3.....	1	1.59
G & O Food for Bulbs 5-6-15.....	1	.46
G & O Prizegro 5-10-5.....	1	.96
G & O Rose Food 7-8-5.....	1	1.15
G & O Evergreen Tree & Shrub Food 9-7-4.....	1	1.54
C. L. Halvorson Tree Service		
Halvorson Tree Food 8-6-2.....	1	1.36
A. H. Hoffman, Inc.		
Hoffman Azalea & Evergreen Food 4 6-10.....	1	1.74
Hoffman Rose Food 5-10-5.....	1	—
Hydroponic Chemical Co., Inc.		
Hyponex Plant Food 7-6-19.....	1	—
Hy-Trous Corp.		
Hy-Trous 4-8-4.....	1	—
International Minerals & Chemical Corp.		
International 0-10-20.....	2	—
International 4-12-16, 1% magnesium oxide.....	2	—
International 5-8-7, 1% magnesium oxide.....	3	—
International 5-10-5, 1% magnesium oxide.....	1	—
International 5-10-10, 1% magnesium oxide.....	3	—
International 5-10-10, 2% water soluble magnesium oxide.....	3	2.89
International 6-3-6, 2% water soluble magnesium oxide.....	2 a	2.89
International 6-12-12, 2% water soluble magnesium oxide.....	2	—
International 7-7-7, 1% magnesium oxide.....	3	—
International Fertilis 8-6-2, 1% water soluble magnesium oxide.....	2	2.14
International 8-16-16.....	2	—
International 10-10-10, 1% magnesium oxide.....	3	—
Lexington Gardens, Inc.		
Bu-T-Grow 3-6-3.....	1	—
Liquid Fertilizer Corporation of America		
Beauty Lawn 12-8-4.....	4	—

a Potash in forms other than muriate.

b See table of "Mixtures showing a commercial shortage of \$1 or more per ton."

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Percentage of Water Insoluble Nitrogen
Liquilawn, Inc.		
Liquilawn 12-8-4.....	2	—
Loanium Company of America		
Loanium 5-10-5.....	1	—
Gro-Plus 16 16-16.....	2	—
John D. Lyon, Inc.		
Old New England 6-8-3.....	1	1.2
Monsanto Chemical Co.		
Foliar 20-20-20.....	2	—
Old Deerfield Fertilizer Co., Inc.		
Old Deerfield 0-12-24.....	1	—
Old Deerfield 0-14-14.....	1	—
Old Deerfield 0-20-20.....	1	—
Old Deerfield 4-12-8.....	1	—
Old Deerfield 4-12-16.....	1	—
Old Deerfield 5-5-15 Tobacco Starter.....	1	—
Old Deerfield 5-8-7 All Crop.....	2	—
Old Deerfield 5-8-7, 2% magnesium oxide, potash other than muriate.....	1 a	—
Old Deerfield 5-10-5 Trucker's Special.....	1	—
Old Deerfield 5-10-10 Potato.....	2	—
Old Deerfield 5-10-10, 2% magnesium oxide, potash other than muriate.....	1 c	—
Old Deerfield 6-3-6 Complete Tobacco.....	1 a	3.37
Old Deerfield 6-3-6, 2% magnesium, with 1000 lbs. cottonseed meal.....	4 a	3.45
Old Deerfield 6-4-7 Complete Tobacco.....	3 a	3.61
Old Deerfield Lawnshrub 6-5-5.....	2	2.09
Old Deerfield 6-8-8 Special Potato.....	1	—
Old Deerfield 7-7-7 Grass Top Dressing.....	2	—
Old Deerfield 8-8-8.....	2	—
Old Deerfield 8-12 12, 2% magnesium oxide.....	1	—
Old Deerfield 8-16-16.....	1	—
Old Deerfield 10-10-10.....	1	—
Old Fox Agricultural Sales, Inc.		
Old Fox Brand 0-12-24.....	1	—
Old Fox Brand 5-8-7.....	3	—
Old Fox Garden Food 5-10-5.....	1	—
Old Fox Brand 5-10-10.....	2	—
Old Fox Brand 5-10-10, 2% water soluble magnesium oxide....	1	—
Old Fox Brand 7-7-7.....	1	—
Old Fox Brand Turf Food 8-6-2.....	1	1.35
Old Fox Brand 10-10-10.....	1	—

a Potash in forms other than muriate.

c Potash in forms other than muriate, 8.87%: potash as muriate, 1.23%.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Olds & Whipple, Inc.		
O & W 5-8-7 Potato & General Purpose.....	2	—
O & W 5-10-5.....	1	—
O & W 5-10-10 Potato.....	2	—
O & W 5-10-10 Potato, 2% magnesium oxide.....	1	—
O & W 6-3-6 Blue Label Tobacco, potash from cotton hull ash.....	4 a	3.38
Parks-Barnes, Inc.		
Black Magic Blossom Booster 4-10-10.....	1	—
Black Magic Liquid 10-5-5.....	1	—
Pedigreed Seed Co.		
Loft's Lawn Food 5-10-4.....	1	2.27
Loft's General Purpose Plant Food 12-14 14.....	1	—
Penn Co.		
Ferti-Flora 3-3-3.....	1	—
Plantabbs Corp.		
Fulton's Plantabbs 11-15-20.....	1	—
Ra-Pid-Gro Corp.		
Ra-Pid-Gro 23-21-17.....	1	—
Rogers & Hubbard Co.		
Gro-Fast Acid Fertilizer 4-10-4.....	1	1.07
Gro-Fast Plant Food 5-10-5.....	1	1.05
Gro-Fast Rose Food 7-10-5.....	1	1.78
Gro-Fast SOL Water Soluble Concentrate 16-20-16.....	1	—
Hubbard Dairy 0-10-20.....	1	—
Hubbard Alfalfa 0-14-14.....	1	—
Hubbard Vegetable 5-8-7.....	2	—
Hubbard Garden 5-10-5.....	1	.09
Hubbard General Crop 5-10-10.....	2	—
Hubbard General Crop 5-10-10, 2% magnesium oxide.....	1	—
Hubbard High Potash 5-10-10.....	1	1.24
Hubbard Tobacco Grower 6-3-6.....	1 a	3.46
Hubbard Hi-Organic 6-8-8.....	1	1.29
Hubbard Potato 6-8 8.....	1	—
Hubbard Weed-Kil Lawn Food 6-10-4.....	1	3.48
Hubbard Hi-Organic 6-12-12.....	1	1.67
Hubbard Top Dressing 7-7-7.....	2	—
Hubbard Golf Course 8-6-2.....	1	1.85
Hubbard Golf Course 10-6-4.....	1	2.34
Hubbard Hi-Top 10-10-10.....	1	—
Rose Manufacturing Co.		
Tri-Ogen Rose Food 5-10-5.....	1	—
O. M. Scott & Sons Co.		
Scotts Organic Fertilizer 5-2-3.....	1	4.14
Scotts Weed & Feed 7-11-5.....	1	3.26
Scotts Turf Builder 9-7-4.....	1	2.86

a Potash in forms other than muriate.

Mixtures Substantially Complying with Guarantees —Concluded

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Sears, Roebuck & Co.		
Cross Country Bulb Food 4-12-8.....	1	—
Cross Country Economy 5-10-5.....	1	—
Cross Country Plant Food 5-10-5.....	1	—
Cross Country Rose Food 5-10-5.....	1	—
Cross Country Hi-Organic 8-8-8.....	1	1.94
Cross Country Evergreen Food 10-6-4.....	1	—
Cross Country Instant Tomato Food 15-30-15.....	1	—
Cross Country Instant Rose Food 20-20-20.....	1	—
Smith Equipment & Supply Co.		
Fertil-Ade 10-8-6.....	1	—
Stimulant Laboratories		
Stimulant African Violet Food 5-8-7.....	1	—
Super Lawn Corp.		
Super Lawn 12-8-4.....	5	—
Swift & Co., Plant Food Div.		
Blenn 5-10-5.....	1	—
Brimm 5-10-10.....	1	—
Pasturgo 2-12-12.....	1	—
Red Steer 5-8-7.....	2	—
Red Steer 5-10-10.....	1	—
Red Steer 7-7-7.....	2	—
Vigoro Camellia & Azalea 5-10-10.....	1	.81
Vigoro 6-10-4.....	1	.47
Golden Vigoro 6-10-4.....	2	3.38
Vigoro Plus Chlordane 6-10-4.....	1	.33
Instant Vigoro 19-28-14.....	1	—
Universal Chemical Co.		
Electra Plant Food 5-10-3.....	1	1.77
Valley Feed and Supply Co., Inc.		
Adorna 3-1-1.....	1	3.17
Virilium Corp.		
Virilium 12-8-4.....	5	—
Winslow Nurseries, Inc.		
Winslow's All Purpose Green Valley Plant Food 5-10-5.....	1	—
Winslow's Green Valley High Organic Turf Food 8-6-2.....	1	1.78
Woodruff Fertilizer Works		
Woodruff's 5-8-7.....	1	—

NITROGEN COMPOUNDS

Manufacturer and Brand	Nitrogen	
	Found	Guaranteed
American Agricultural Chemical Co.		
Acrinite.....	{ 8.25	8.25
Sulphate of Ammonia.....	{ 9.24	8.25
	20.89	20.6
American Cyanamid Co.		
Aero Cyanamid.....	{ 20.34	20.0
Lawn & Garden Cyanamid.....	{ 20.20	20.0
Aeroprills Ammonium Nitrate.....	{ 20.45	20.0
	33.50	33.5
Carac Corp.		
Carac.....	46.00	46.0
Chilean Nitrate Sales Corp.		
Chilean Nitrate of Soda—Champion Brand.....	{ 16.19	16.0
	{ 16.14	16.0
Cocke & Co.		
41% Cottonseed Meal.....	6.81	6.56
Consolidated Rendering Co.		
Corenco Organic Tankage.....	{ 9.15	8.25
	{ 9.25	8.25
E. I. du Pont de Nemours & Co.		
Du Pont Nu Green Fertilizer Compound.....	45.33	45.0
Goulard & Olena, Inc.		
Cottonseed Meal.....	6.70	6.7
Nitrate of Soda.....	16.10	16.0
Humphreys-Godwin Co.		
Dixie Brand 41% Cottonseed Meal.....	{ 6.50	6.56
	{ 6.56	6.56
International Minerals & Chemical Corp.		
Castor Pomace.....	5.96	4.53
Spencer Kellogg & Sons, Inc.		
Castor Pomace.....	{ 5.54	5.5
	{ 5.59	5.5
L. B. Lovitt & Co.		
Lovitt Brand 41% Protein Cottonseed Meal.....	6.57	6.56
Nitrogen Division, Allied Chemical & Dye Corp.		
Arcadian A-N-L Fertilizer Compound (a).....	20.86	20.5
Arcadian Nitrate of Soda.....	16.20	16.0
Arcadian Urea 45 Fertilizer Compound.....	45.00	45.0
Old Deerfield Fertilizer Co., Inc.		
Sulphate of Ammonia.....	20.81	20.5
Old Fox Agricultural Sales, Inc.		
Old Fox Brand Organo.....	5.00	5.0

Brands Seriously Deficient

Goulard & Olena, Inc.		
G & O Sulphate of Ammonia (b).....	20.31	20.75
Pedigreed Seed Co.		
Loft's Lawn Tonic (b).....	3.55	4.00

a Magnesium oxide found, 8.95%; guaranteed, 7.0%.

b Since this material is sold in small packages, a calculation of the shortage per ton is not feasible. Deficiency found is great enough for inclusion of this material with seriously deficient brands.

PRODUCTS SUPPLYING ORGANIC NITROGEN AND PHOSPHORIC ACID

Manufacturer and Brand	Total Nitrogen Found	Total Phosphoric Acid		Available Phosphoric Acid	
		Found	Guar- anteed	Found	Guar- anteed
American Agricultural Chemical Co. Bone Meal 1.50-25.....	2 78	27 30	25 0	—	—
Apothecaries Hall Co. Green-Gro All Organic 5-4.....	5 37	—	—	5 50	4 0
Armour Fertilizer Works. All Organic 5-5.....	5 77	5 70	—	5 30	5 0
Bone Meal 2.30-23.....	2 76	25 50	23 0	—	—
H. J. Baker & Bro. Nitrogenic 5-4.....	5 19	—	—	4 77	4 0
Joseph Breck & Sons Corp. Greenite 5-4.....	4 85	—	—	4 21	4 0
Consolidated Rendering Co. Corenco Ground Bone 2-22.....	{ 3.14 2.64	25 50 25 00	22 0 22 0	—	—
Corenco Organic Turf Fertilizer 4.75-4....	{ 5.43 5.41	—	—	4 50 4 20	4 0 4 0
Crawford's Wholesale Garden Supplies Apo Organic Lawn Food 5-3.....	5 75	—	—	3 70	3 0
Faesy & Besthoff, Inc. F & B Pure Bone Meal 2.47-23.....	2 62	27 60	23 0	—	—
Goulard & Olena, Inc. G & O Ground Bone Meal 2.40-20.....	2 40	26 10	20 0	—	—
Thomas J. Grey Co. Gardener's Green Brand Bone Meal 2-20.....	2 15	29 10	20 0	—	—
A. H. Hoffman, Inc. Bone Meal 3.70-20.....	4 70	21 20	20 0	—	—
International Minerals & Chemical Corp. Bone Meal 2.47-23.....	2 47	28 00	23 0	—	—
Mella Green 5-4.....	{ 5.77 5.96	— —	— —	4 20 4 20	4 0 4 0
Lawn-Tex Corp. Organi-Green 5-4.....	5 65	—	—	4 45	4 0
Lebanon Chemical Corp. Farmite Bone Meal 2.30-20.....	2 39	27 30	20 0	—	—
Turf-Organic 5-4.....	4 71	—	—	4 17	4 0
Old Deerfield Fertilizer Co., Inc. Dry Ground Fish 9-5.....	9 29	6 25	5 0	—	—
Reddi-Mix Products Co. Bone Meal 2.25-24.....	2 65	25 60	24 0	—	—
Rogers & Hubbard Co. Gro-Fast Bone Meal 2-23.....	2 43	26 50	23 0	—	—
Sears, Roebuck & Co. Cross Country Bone Meal 2-26.....	2 68	26 90	26 0	—	—
Cross Country Lawn Food 5-4.....	5 34	—	—	5 35	—
Sewerage Commission of the City of Milwaukee Milorganite 5.5-4.....	{ 5.64 5.50	4 55	—	4 09 4 06	4 0 4 0
Swift & Co., Plant Food Division All Organic Lawn Food 5-3.....	5 81	—	—	3 65	—

PHOSPHORIC ACID COMPOUNDS

Manufacturer and Brand	Total Phosphoric Acid	Available Phosphoric Acid	
		Found	Guaranteed
American Agricultural Chemical Co.			
AA Phosphate Rock.....	30 20 ^a	—	—
18% Normal Superphosphate.....	{ —	18.05	18.0
	{ —	18.05	18.0
Apothecaries Hall Co.			
Superphosphate 20%.....	—	20.20	20.0
Armour Fertilizer Works			
Big Crop Superphosphate 20%.....	21.65	19.69	20.0
Consolidated Rendering Co.			
Corenco Superphosphate 20%.....	{ —	20.65	20.0
	{ —	20.85	20.0
	{ —	20.35	20.0
Davison Chemical Co.			
Davco Granulated 20% Superphosphate.....	—	20.05	20.0
Eastern States Farmers' Exchange, Inc.			
Superphosphate 20%.....	—	20.40	20.0
Farm Bureau Association			
Superphosphate 20%.....	—	20.85	20.0
Goulard & Olena, Inc.			
G & O 20% Superphosphate.....	—	20.00	20.0
International Minerals & Chemical Corp.			
Superphosphate 20%.....	{ —	21.00	20.0
	{ —	20.40	20.0
	{ —	20.85	20.0
	{ —	20.45	20.0
Old Deerfield Fertilizer Co., Inc.			
Superphosphate 20%.....	—	20.10	20.0
Rogers & Hubbard Co.			
Hubbard Superphosphate 20%.....	—	20.55	20.0

^a Guaranteed 30% total phosphoric acid.

POTASH COMPOUNDS

Manufacturer and Brand	Water Soluble Potash	
	Found	Guaranteed
American Agricultural Chemical Co. Muriate of Potash.....	62.4	60.0
Consolidated Rendering Co. Muriate of Potash.....	{ 60.0 59.2	60.0 60.0
Eastern States Farmers' Exchange, Inc. Muriate of Potash.....	60.8	60.0
Goulard & Oleno, Inc. Muriate of Potash.....	60.0	60.0
Old Deerfield Fertilizer Co., Inc. Muriate of Potash.....	60.0	60.0
Brand Seriously Deficient		
International Minerals & Chemical Corp. Muriate of Potash (a).....	58.8	60.0

a Approximate commercial shortage per ton, \$1.20.

DRIED ANIMAL MANURES

Continuing the inspection of the quality of dried animal manures being sold in Massachusetts, all samples of these products were subjected to both microscopic examination and chemical analysis. The results are given in the next table.

Four lots were found mislabelled and consequently were withdrawn from sale. Some of the other lots sampled contained large amounts of bedding material but not in sufficient quantity to warrant withdrawal from sale.

Aside from materials used as bedding, a reasonable amount of which is to be expected in animal manures, the most common contaminant found in large amounts is sand. This, also, is a normal constituent of animal manures. However, the presence of 40-, 50-, or 60-percent sand is an indication of either deliberate adulteration or over-enthusiasm in the deep use of shovels or scoops when removing the manure from the stockyards.

In the future, the Massachusetts Fertilizer Control Service will require that all dried animal manures containing more than 30-percent sand be labelled as "Sheep Manure and Sand.", "Cow Manure and Sand," etc. The word "sand" shall appear in the same size type as the other words in the brand name.

PULVERIZED ANIMAL MANURES

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Acid Insoluble Ash (Sand)	Microscopic Examination
American Agricultural Chemical Co. Sheep Manure (1.25-1.2)	1.94	1.70	5.35	26.8	Sample as represented.
Armour Fertilizer Works Cattle Manure (1.85-0.75-1.75) . . . Sheep Manure (1.5-1.2)	2.29 1.53	1.25 1.65	2.60 4.41	24.2 32.8	Sample as represented. Sample is sheep manure containing excessive sand.
Clinton Nurseries New Era Cow Manure (2-1-1)	2.03	1.30	2.05	28.5	Sample a mixture of sand, shavings, an industrial by-product, and a little poultry manure. Contains no cow manure. Withdrawn from sale.
Consolidated Rendering Co. Corenco Sheep Manure (2-1-2)	2.06	2.00	3.81	11.9	Sample as represented.
Goulard & Olena, Inc. G & O Sheep-Guano Manure (2-1-1)	1.39	1.10	.82	64.7	Sample a mixture of sand, wood shavings, and a little poultry manure. Contains no sheep manure. Withdrawn from sale.
A. H. Hoffman, Inc. Cow Manure (2-1-1) Sheep Manure (1.5-1-2)	2.00 1.69	1.45 1.10	2.20 4.40	3.2 23.9	Sample mainly peanut shells with added phosphate and a little manure. Sample as represented.
International Minerals & Chemical Corp. Sheep Manure (1.25-1-2)	1.60	1.95	4.75	19.9	Sample as represented

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Acid Insoluble Ash (Sand)	Microscopic Examination
Natural Plant Food Co.					
Longhorn Brand Cattle Manure (2-1-2).....	2.00	1.24	2.80	21.9	Sample as represented.
Ramshorn Brand Sheep Manure (2-1-2).....	2.00	1.10	3.10	18.6	Sample as represented.
Reddi-Mix Products Co.					
Reddi-Mix Sheep Manure (1-0.5-2).....	1.19	.58	2.70	32.2	Sample is sheep manure with excessive sand.
Rogers & Hubbard Co.					
Gro-Fast Cow Manure (2-1-1).....	2.12	1.20	2.52	2.1	Sample as represented.
Gro-Fast Sheep Manure (1.25-1-2).....	1.25	.85	3.30	34.8	Sample is sheep manure containing excessive sand.
Sears, Roebuck & Co.					
Cross Country Cattle Manure (1.5-0.75-2).....	1.50	.75	2.33	40.7	Sample is cattle manure with excessive sand. With drawn from sale.
Cross Country Sheep Manure (1.5-0.75-2).....	2.30	1.30	3.20	19.8	Sample mainly cow manure. Withdrawn from sale.
Wendell S. Still					
Farmanure (2-1-1).....	3.15	1.80	1.45	2.6	Sample mainly poultry manure.
Thomson Nursery					
Cow Manure (0.5-0.25-0.2).....	.40	.20	.39	4.4	Contains 75.0 percent water.*
Triple A Mills					
Sure-Gro Fertilizer (3.25-2.5-1.5).....	3.04	4.50	1.95	8.2	Sample is poultry manure.
Walker-Gordon Laboratory Co.					
Bovung (2-1 1).....	2.27	1.50	2.83	2.0	Sample as represented.

* Chemical analysis.

Manufacturer and Brand

Manufacturer and Brand	Calcium Oxide (CaO)		Magnesium Oxide (MgO)		Expressed in Terms of Calcium Oxide		Insoluble Matter		Mechanical Analysis (Per Cent)	
	Found	Guar- anteed	Found	Guar- anteed	Per Cent	Pounds in One Ton	Insoluble Matter	Finer than 100-mesh	Finer than 20-mesh	
Adams Hydrate Co., Inc. Fertility Hydrated Lime	61.6	60.0	1.9	.5	61.2	1,224	3.6	—	—	—
Conklin Limestone Co., Inc., Canaan, Conn. High Magnesium Agricultural Limestone	27.0	30.0	18.0	18.0	49.2	984	15.8	69.0	1.9	—
Conklin Limestone Co., Inc., Lincoln, R. I. Standard Agricultural Ground Limestone	35.5	34.0	16.7	1.5	54.7	1,094	8.0	59.3	1.0	—
A. H. Hoffman, Inc. Hoffman Hydrated Lime	69.6	60.0	1.9	1.0	70.4	1,408	1.1	—	—	—
Lee Lime Corp. Lee Double Strength Agricultural Hydrated Lime	46.6	45.0	33.3	30.0	90.1	1,802	.7	—	—	—
Lee Hydrated Lime—General Purposes	45.2	45.0	34.3	30.0	90.5	1,810	.7	—	—	—
Lee Lawn & Garden Limestone	39.9	38.0	9.5	8.0	51.7	1,034	9.5	91.7	99.9	—
	39.2	38.0	9.6	8.0	49.0	980	13.5	91.5	99.9	—
	41.4	38.0	10.1	8.0	53.9	1,078	5.4	91.2	99.9	—
Lee Pulverized Limestone	30.0	30.0	22.8	20.0	50.0	1,180	1.2	54.5	1.1	—
Lee Pulverized Limestone	42.9	35.0	9.8	8.0	53.9	1,078	5.0	92.2	99.9	—
Lee Spray Lime	41.6	45.0	33.6	30.0	85.2	1,704	.4	—	—	—
Today Aqua Hydrate	39.3	35.0	29.1	25.0	77.5	1,546	1.3	—	—	—
	39.5	35.0	29.1	25.0	77.7	1,554	1.1	—	—	—
New England Lime Co. Nelson Agricultural Hydrated Lime (Adams)	73.4	70.0	1.1	.5	73.6	1,472	.4	—	—	—
Nelson Agricultural Hydrated Lime (Canaan, Conn.)	46.6	47.0	32.5	31.0	90.5	1,810	.4	—	—	—
Nelson Agricultural Gypsum Limestone (Canaan, Conn.)	30.8	30.0	22.6	21.0	60.1	1,202	1.4	—	—	—
Nelson Land Lime (Canaan, Conn.)	37.0	35.0	28.0	25.0	73.8	1,476	1.6	—	—	—
Rogers & Hubbard Co. Good Fast Hydrated Lime	43.7	40.0	32.7	25.0	86.2	1,724	5	—	—	—
O. M. Scott & Sons Co. Scott's Soil Improver (a)	29.9	14.0	10.6	5.57	28.0	560	10.7	—	—	—
United States Gypsum Co. Ben Franklin Agricultural Gypsum (b) Red Top General Purpose Hydrated Lime (Farmans) Red Top Hydrated Agricultural Lime USG Agricultural Limestone (Farmans)	32.8 71.8 71.6 50.5 52.1	30.0 70.0 70.0 50.5 50.5	1.1 2.5 3 1.9 2.8	Trace Trace Trace .15 .25	73.1 72.0 72.0 54.8 54.8	1,462 1,440 1,110 1,096	5.1 1.8 3.2 5.3	— — — 78.8 79.0	— — — — —	— — — — —

a A mixture of limestone and gypsum (calcium sulfate).

b Calcium sulfate found, 82.2 percent; guaranteed, 64.5 percent.

**DIRECTORY OF MANUFACTURERS WHO REGISTERED FERTILIZERS
FOR SALE IN MASSACHUSETTS IN 1955**

Alaska Fertilizer Co., Division of U.S. Insecticide Co., 84 Seneca St., Seattle 1, Wash.
American Agricultural Chemical Co., 285 River St., North Weymouth, Mass.
American Chemical Paint Co., Ambler, Penn.
American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.
American Liquid Fertilizer Co., Inc., 2nd St. at St. Clair, Marietta, Ohio
Apothecaries Hall Co., 28 Benedict St., Waterbury, Conn.
Archer-Daniels-Midland Co., Minneapolis 2, Minn.
Armour Fertilizer Works, Carteret, N. J.
Ashcraft-Wilkinson Co., 601 Trust Co. of Georgia Bldg., Atlanta 3, Ga.
Associated Seed Growers, Inc., Milford, Conn.
Atkins & Durbrow, Inc., Port Colborne, Ont., Canada

H. J. Baker & Bro., 600 Fifth Ave., New York 20, N. Y.
F. A. Bartlett Tree Expert Co., 60 Canal St., Stamford, Conn.
Borden Co., Chemical Div., 350 Madison Ave., New York 17, N. Y.
Bradley & Baker, 1401 Peachtree St., N.E., Atlanta, Ga.
Joseph Breck & Sons Corp., 401 Summer St., Boston 10, Mass.
Buell Fertilizer Co., Exeter, N. H.

California Spray-Chemical Corp., Lucas and Ortho Way, Richmond, Cal.
Carac Corp., 163 Babylon Turnpike, Freeport, N. Y.
Carbola Chemical Co., Inc., Natural Bridge, N. Y.
J. J. Chesnicka Landscape Service, 47 Broad St., Westfield, Mass.
Chicago Stock Yards Compost Co., 503 Exchange Bldg., Chicago 9, Ill.
Chilean Nitrate Sales Corp., 120 Broadway, New York 5, N. Y.
Clinton Nurseries, Clinton, Conn.
Coastal Dry-Manure Corp., Dagsboro, Del.
Cocke & Co., 208 William-Oliver Bldg., Atlanta, Ga.
Consolidated Rendering Co., 178 Atlantic Ave., Boston 10, Mass.
Crawford's Wholesale Garden Supplies, 156 Valley St., Providence, R. I.

Davey Tree Expert Co., 117 South Water St., Kent, Ohio
Davison Chemical Co., Davison of W. R. Grace & Co., Baltimore 3, Md.
Doggett-Pfeil Co., 681 Morris Turnpike, Springfield, N. J.
E. I. du Pont de Nemours & Co., Wilmington, Del.

Eastern States Farmers' Exchange, Inc., 26 Central St., West Springfield, Mass.
Essex County Cooperative Farming Association, 144 South Main St., Topsfield, Mass.
Excell Laboratories, Inc., 2732 Indiana Ave., Chicago, Ill.

Faesly & Besthoff, Inc., 325 Spring St., New York 13, N. Y.
Farm Bureau Association, 155 Lexington St., Waltham, Mass.
Fertile Corp. of America, Worthington, Ohio
Fiestar, Inc., 39 Planting Field Rd., Roslyn Heights, N. Y.
Ford Motor Co., 3000 Schaefer Road, Dearborn, Mich.
Forward House Div., Olin Mathieson Chemical Corp., 745 Fifth Ave., New York 22, N. Y.
Frank's Market Garden, 1398 Allen St., Springfield, Mass.
Frost & Higgins Co., Arlington, Mass.

Garden Research Laboratories, 18 East 41 St., New York 17, N. Y.
Garfield Williamson, Inc., Jersey City, N. J.
Goulard & Olena, Inc., Skillman, N. J.
Grace Chemical Co., Hanover Sq., New York, N. Y.
Grant Co., 2735 N. Ashland Ave., Chicago 14, Ill.
Thomas J. Grey Co., Div. of Littlefield-Wyman Nurseries, Inc., 227 Centre Ave., Abington, Mass.

C. L. Halvorson Tree Service, 150 North St., Pittsfield, Mass.
Heller Greenhouse Laboratories, 218 E. Pikes Peak Ave., Colorado Springs, Col.

A. H. Hoffman, Inc., Landisville, Penn.
Hoover Soil Service, Gilman, Ill.
Hosdreg Co., Inc., Deming, N. Mex.

Humphreys-Godwin Co., 2246 Park Ave., Memphis, Tenn.
 Hydroponic Chemical Co., Inc., Copley, Ohio
 Hy-Trous Corp., 50 Cross St., Winchester, Mass.

International Minerals & Chemical Corp., Woburn, Mass.

Spencer Kellogg & Sons, Inc., 98 Delaware Ave., Buffalo 2, N. Y.

Lawn-Tex Corp., 1640 Fulton St., Chicago, Ill.
 Lebanon Chemical Corp., Lebanon, Penn.
 Lexington Gardens, Inc., 93 Hancock St., Lexington, Mass.
 Liquid Fertilizer Corp. of America, 960 Springfield Ave., Irvington, N. J.
 Liquilawn, Inc., 11 West 42 St., New York 36, N. Y.
 Liquilizer Corp., Vincennes, Ind.
 Loanium Company of America, 2 Kingsland Ave., Harrison, N. J.
 L. B. Lovitt & Co., 314 Cotton Exchange Bldg., Memphis, Tenn.
 John D. Lyon, Inc., 143 Alewife Brook Pkwy., Cambridge 40, Mass.

McCormick & Co., Inc., McCormick Bldg., Baltimore 2, Md.
 Mamlon Co., 1089 Whalley Ave., New Haven 15, Conn.
 Monsanto Chemical Co., 1700 South Second St., St. Louis 4, Mo.

"Na-Churs" Plant Food Co., 421 Monroe St., Marion, Ohio
 Natural Plant Food Co., 210 West California St., Oklahoma City 2, Okla.
 Nitrogen Div., Allied Chemical & Dye Corp., Hopewell, Va.

Old Deerfield Fertilizer Co., Inc., South Deerfield, Mass.
 Old Fox Agricultural Sales, Inc., 49 Valley St., East Providence, R. I.
 Olds & Whipple, Inc., 168 State St., Hartford, Conn.

Parks-Barnes, Inc., 530 - 6th St., Hermosa Beach, Cal.
 Pedigreed Seed Co., 96 Forrest St., Jersey City 5, N. J.
 Penn Co., 39 Deering Road, Dorchester, Mass.
 Plant Magic Products, Inc., 40 Highland Ave., Seekonk, Mass.
 Plantabbs Corp., 1105 Maryland Ave., Baltimore 1, Md.
 Premier Peat Moss Corp., 535 Fifth Ave., New York 17, N. Y.
 Proen Products Co., 9th & Grayson Sts., Berkeley 10, Cal.

Ra-Pid-Gro Corp., 88 Ossian St., Dansville, N. Y.
 John Reardon & Sons, Div. of Wilson & Co., Inc., 51 Waverly St., Cambridge 39, Mass.
 Reddi-Mix Products Co., 543 Ferry St., Everett, Mass.
 Rogers & Hubbard Co., Portland, Conn.
 Rose Manufacturing Co., 445 Main St., Beacon, N. Y.
 Ruhm Phosphate & Chemical Co., Columbia, Tenn.

St. Louis National Stockyards Co., Exchange Bldg., National Stock Yards, Ill.
 O. M. Scott & Sons Co., Marysville, Ohio
 Sears, Roebuck & Co., 925 South Homan Ave., Chicago 7, Ill.
 Sewerage Commission of the City of Milwaukee, Milwaukee 1, Wis.
 Smith Equipment & Supply Co., 1615-21 N. Central Ave., Chicago 39, Ill.
 Soil Builders International Corp., 33 West 42nd St., New York 36, N. Y.
 Soil Saver Service, Pawlet, Vt.
 Stern's Garden Products, Inc., 404 William St., Geneva, N. Y.
 Wendell S. Still, Middle Country Road, Selden, N. Y.
 Stimuplant Laboratories Co., Columbus 16, Ohio
 Super Lawn Corp., 355 Clinton Place, Newark, N. J.
 Swift & Co., Plant Food Div., Boston 4, Mass.

Tennessee Corp., 617-27 Grant Bldg., Atlanta, Ga.
 Thomson Nursery, Danvers, Mass.
 Triple A Mills, Townsend Harbor, Mass.

Universal Chemical Co., 52 Oakville St., Lynn, Mass.

Valley Feed & Supply Co., Inc., Union Road, Spring Valley, N. Y.
Virilium Corp., Broad St., Medway, Mass.
Viscoid Products Co., Subsidiary of Druid Hill Park Seed Corp., 2700 Wilmarco Ave.,
Baltimore 23, Md.

Walker-Gordon Laboratory Co., Plainsboro, N. J.
Winslow Nurseries, Inc., Needham, Mass.
F. H. Woodruff & Sons, Inc., Milford, Conn.
Woodruff Fertilizer Works, Inc., North Haven, Conn.

**DIRECTORY OF MANUFACTURERS WHO REGISTERED
AGRICULTURAL LIME PRODUCTS FOR SALE
IN MASSACHUSETTS IN 1955**

Adams Hydrate Co., Inc., Adams, Mass.
Conklin Limestone Co., Inc., Sand Road, Canaan, Conn.
Conklin Limestone Co., Inc., R.F.D., Saylesville, R. I.
A. H. Hoffman, Inc., Landisville, Penn.
Kelley Island Co., 1132 Leader Bldg., Cleveland 14, Ohio
Lee Lime Corp., Lee, Mass.
Limestone Products Corp. of America, 122 Main St., Newton, N. J.
H. E. Millard Lime & Stone Co., Annville, Penn.
New England Lime Co., Adams, Mass.
Rogers & Hubbard Co., Portland, Conn.
O. M. Scott & Sons Co., Marysville, Ohio
United States Gypsum Co., 300 West Adams St., Chicago 6, Ill.

Seed Inspection

BY

Seed Control Service Staff

Massachusetts Agricultural Experiment Station

Jan. 22, 1957



This report, the twenty-eighth in seed control service, is a record of work delegated to the Massachusetts Agricultural Experiment Station during 1955 by authority of Chapter 94 as amended by Chapter 377 of the Acts of 1946.

LABORATORY REGULATIONS AND FEES FOR TESTING SEED

The following regulations and fees have been approved by the Director of the Massachusetts Agricultural Experiment Station.

FIELD CROPS:	KIND OF SEED	PURITY	GERMINATION	PURITY AND
		ONLY	ONLY	GERMINATION
	Alfalfa, Rape, Ryegrasses, Soybeans, Timothy.....	\$1.00	\$0.50	\$1.25
	Cereals, Buckwheat, Sudan Grass, Vetches.....	1.25	.50	1.50
	Clovers, Fescues, Reed Canary Grass.....	1.00	.50	1.50
	Brome Grass, Millets.....	1.50	.50	2.00
	Bentgrasses, Bluegrasses, Orchard Grass, Redtop....	2.00	.50	2.25
	Redtop (Unhulled).....	2.50	.50	2.75

Mixtures: Lawn, Pasture, Mowing, etc.

Purity only.....\$2.50

Germination only......50 for each component

Purity and Germination..... 2.50 + .50 for each component

Special Mixtures: Consisting of two kinds of cereals, two kinds of clover only, or Timothy and one kind of clover

Purity only..... \$1.25

Germination only......50 for each component

Purity and Germination..... 2.00

Vegetables: Germination tests for all kinds of vegetable seeds, 30 cents each.

Cleaning Tobacco Seed: For each lot of one pound or less, based on the weight of seed as received for cleaning, 50 cents.

Kinds of Seed Not Listed: Fees for testing and for other seed determinations not listed will be based on the time consumed in making the test or for other service requested.

Free Tests: During any one calendar year, the Seed Testing Laboratory will allow two free tests of vegetable or tobacco seed to any person residing or doing business in the Commonwealth.

The minimum weights of samples to be submitted for analysis are:

- Two ounces of grass seed, white or alsike clover, or seeds not larger than these.
- Five ounces of red or crimson clover, alfalfa, ryegrasses, millet, rape, or seeds of similar size.
- One pound of cereal, vetches, or seeds of similar or larger size.

The minimum number of seeds of any kind to be submitted for a germination test is 400.

Samples should be taken so as to represent correctly the lot sampled, each placed in a strong container, the parcel of samples securely wrapped and addressed to Seed Laboratory, Agricultural Experiment Station, Amherst, Mass.

Checks or Money Orders must be made payable to the University of Massachusetts and sent to the Seed Laboratory.

In no case will the final report for work done be rendered until all fees are paid.

Massachusetts Vegetable Seed Standards

The amended seed law requires in Section 261 I that the Director of the Massachusetts Agricultural Experiment Station shall, after reasonable notice and hearing and with the approval of the Commissioner of Agriculture, adopt vegetable seed germination standards, prescribe rules and regulations, and in like manner modify or amend rules and regulations governing the methods of sampling, inspecting, analyzing, testing, and examining agricultural, vegetable and flower seeds and the tolerances to be followed in administration.

A hearing for the above stated purpose was held in Horticultural Hall, Worcester, Massachusetts, at 3 P. M., October 18, 1946. The following set of standards was so approved and adopted:

KIND OF SEED	GERMINATION STANDARD %	KIND OF SEED	GERMINATION STANDARD %
Artichoke (<i>Cynara Scolymus</i>)....	60	Kale.....	75
Asparagus.....	70*	Kohlrabi.....	75
Bean, Lima.....	70	Leek.....	60
Bean, Scarlet Runner.....	75	Lettuce.....	80
Bean, Other Varieties.....	75	Muskmelon.....	75
Beet.....	65	Mustard.....	75
Broccoli.....	75	Okra.....	50*
Brussels Sprouts.....	70	Onion.....	70
Cabbage.....	75	Parsley.....	60
Cabbage, Chinese.....	75	Parsnip.....	60
Carrot.....	55	Peas.....	80
Cauliflower.....	75	Pepper.....	55
Celeriac.....	55	Pumpkin.....	75
Celery.....	55	Radish.....	75
Chard, Swiss.....	65	Rhubarb.....	60
Chicory.....	65	Rutabaga.....	75
Citron.....	65	Salsify.....	75
Collard.....	80	Sorrel.....	60
Corn, Sweet.....	75	Soybean.....	75
Cress, Garden or Curled.....	40	Spinach, Common.....	60
Cress, Water.....	35	Spinach, New Zealand.....	40
Cucumber.....	80	Squash.....	75
Dandelion.....	45	Tomato.....	75
Egg Plant.....	60	Tomato, Husk.....	50
Endive.....	70	Turnip.....	80
Fetticus (Corn Salad).....	70	Watermelon.....	70

*Including Hard Seeds. However, the percentage of germination, exclusive of hard seeds and the percentage of hard seed, if present, must be stated.

SEED TESTING FOR THE SEASON OF 1955

By Seed Control Service Staff

Wendell P. Dittmer, *Assistant Research Professor*
In Charge of Seed Laboratory

Jessie L. Anderson, *Assistant Research Professor*
Waldo C. Lincoln, Jr., *Research Instructor*
A. W. Clapp, *State Inspector*¹
Paul W. Brown, *State Inspector*¹

Mrs. Phyllis Russell, *Laboratory Assistant*
Paul Korpita, *Laboratory Assistant*
Leon Stowell, *Laboratory Helper*
May J. Honnay, *Senior Clerk*

From January 1, 1955, to November 1, 1955, the Seed Laboratory received 4046 samples of seed, of which 1454 were collected by the State Department of Agriculture and 2592 were sent in by seedsmen, farmers, and various State institutions.

Classification of the samples for which tests were completed, with the total number of laboratory tests involved, is listed in the following summary:

NUMBER OF SAMPLES		NUMBER OF TESTS	
		PURITY	GERMINATION
364	Field Crops for Purity and Germination	364	364
130	Field Crops for Germination .....	.....	130
2	Field Crops for Purity	2	.....
108	Lawn Mixtures and Other Types of Mixtures, for Purity; Germinations involving 458 ingredients	108	458
3	Lawn Mixtures for Germination; Germinations in- volving 13 ingredients .....	.....	13
12	Lawn Mixtures for Purity	12	.....
2978	Vegetable Samples .....	.....	2978
10	Tree Seed Samples .....	.....	10
71	Tobacco Seed Samples .....	.....	71
368	Flower Seed Samples .....	.....	368
4046		486	4292

Field tests to determine trueness to type consisted of 215 samples of vegetable seed and 363 samples of flower seeds, respectively.

The Seed Laboratory cleaned 71 lots of tobacco seed samples for Connecticut Valley farmers. The gross weight of the tobacco seed samples was 30.62 pounds, and the net weight for the cleaned seed was 24.43 pounds.

¹Employed by the State Department of Agriculture.

Explanation of Tables

Tables 1 through 5 consist of data in conformity with requirements of the Seed Law defined by Chapter 94 as amended by Chapter 377 of the Acts of 1946:

- Table 1. Results of Inspection and Analyses of Field Seeds as defined under Sections 261 B1 and 261 C.
- Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds as defined under Sections 261 B1 and 261 C.
- Table 3. Results of Inspection and Germination of Vegetable Seeds as defined under Sections 261 B2 and 261 C.
- Table 4. Field Tests of Vegetable Seeds, Type and Variety Studies, as defined under Sections 261 H.
- Table 5. Studies of Flower Seeds, Laboratory and Field Tests to Determine Quality, as defined under Sections 261 H.
- Table 6. Summary, by Wholesalers, of the Performance of Flower Seeds in the Field.
- Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory. This table lists the number of samples correctly labeled or mislabeled.

All samples were taken by inspectors from the State Department of Agriculture and were tested at the Seed Laboratory according to the Rules for Seed Testing adopted by the Association of Official Seed Analysts.

Within each table the wholesalers are listed in alphabetical order, and the various kinds of seeds sold by them follow the same alphabetical arrangement. Mislabeling and other irregularities are emphasized by boldface type and explained in the final column of the table. The number preceding each analysis is for identification and reference. The line to the right of the letter "L" gives information copied from the label; that to the right of "F," what was found in the laboratory analysis.

Results of Inspection and Analyses of Field Seeds—Sections 261 B1 and 261 C.

Each lot of Agricultural Seeds except Barley, Buckwheat, Oats, Rye, and Wheat must be labeled to show the commonly accepted name and variety. When the variety is unknown, the label shall bear the statement: "Variety Unknown." The label must also show lot number or other identification; percentage, by weight, of pure seed; percentage, by weight, of inert matter; percentage, by weight, of weed seeds; percentage, by weight, of other agricultural seeds; percentage of (a) germination, exclusive of hard seeds; (b) hard seeds, if present; month and year germination test was completed; origin of Alfalfa, Red Clover, and Field Corn (other than Hybrid)—if origin is unknown, it must be so stated; name and address of the person who labeled the seed, or who sells, offers, or exposes such seed for sale; and the names of secondary noxious weed seeds and number per ounce when present singly or collectively in excess of 1 in 5 grams and 1 in 10 grams of the smaller seeds, and per pound when present in excess of 1 in 25 grams and 1 in 100 grams of the larger seeds. Secondary noxious weeds are dodder (*Cuscuta* spp.), horse nettle (*Solanum carolinense*), wild mustard (*Brassica* spp.), wild garlic and wild onion (*Allium* spp.), perennial sow thistle (*Sonchus arvensis*), corncockle (*Agrostemma githago*), buckhorn plantain (*Plantago lanceolata*), and wild radish (*Raphanus raphanistrum*). Seed is prohibited from sale for having a false or misleading label; unless the test for germination has been completed within a nine-month period or if it contains primary noxious weed seeds in excess of tolerance. Primary noxious weeds are Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), and quack grass (*Agropyron repens*).

Three hundred twenty-six samples of field crop seeds were analyzed in the laboratory. Results of analysis, however, are given only for samples that were mislabeled. In Table 1, complete analysis is recorded; but mislabeling, indicated by boldface type, is applied only to the items named above. Wholesaler's name is in boldface type.

Table 1

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed, Origin and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
538	Barley	Arthur R. Cone, Inc., Buffalo, N. Y. Borden Grain Co., Taunton Six-Row, (*), No. 52x334	L 99.13 F 98.22	0.00 0.00	0.15 0.26	0.72 1.52	85.00 81.00	4 1955 5 1955	*Variety required unless there is a statement. "Variety Unknown." "Six-Row" not a variety. Other Crop Seed exceeds that stated
542	Millet	Hungarian, No. 90x397	L 99.50 F 99.71	0.28 0.07	0.06 0.16	0.16 0.06	82.00 46.00	3 1955 6 1955	Germination below that stated.
5-564	Millet	Danvers State Hospital, Danvers Hungarian, 90x393	L 99.26 F 99.55	0.50 0.33	0.16 0.12	0.08 0.00	80.00 58.00	2 1955 5 1955	Germination below that stated.

Table 1. Results of Inspection and Analyses of Field Seeds—Continued.

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed, Origin and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
404	Kentucky Bluegrass	General Mills, Inc., Fall River No. 34-224.....	L 82.93 F 73.76	0.30 0.13	13.90 25.10	2.87 1.01	80.00 84.00	2/1955 4/1955	Purity below that stated. Inert Matter exceeds that stated.
1274	Red Fescue	General Mills, Inc., No. Abington Creeping, No. 36-182.....	L 98.55 F 99.38	0.00 0.00	0.70 0.62	0.75 0.00	85.00 71.00	2/1955 7/1955	Germination below that stated.
1273	Ryegrass	Common, No. 39-151.....	L 99.10 F 98.22	0.49 0.99	0.31 0.68	0.10 0.11	90.00 93.00	11/1954 6/1955	Noxious Weeds not declared but 18 Buckhorn Plantain per ounce found.
410	Sudan Grass	Mackenzie & Winslow, Inc., Fall River Sweet, No. 92-107.....	L 98.00 F 98.81	0.06 0.01	1.64 0.22	0.30 0.96	85.00 82.00	12/1954 7/1955	Other Crop Seeds exceeds that stated.
1008	Redtop	Ryther & Warren Co., Inc., Belchertown No. 30-273.....	L 94.80 F 91.88	0.60 0.66	3.80 6.18	0.80 1.28	90.00 93.00	2/1955 4/1955	Inert Matter Exceeds that stated.
1261	Ryegrass	Doughten Seed Co., Jersey City, N. J. Wordell Seed Store, New Bedford Common, No. RG 173.....	L 99.00 F 99.87	0.35 0.00	0.65 0.13	0.00 0.00	90.00 95.00	** 6/1955	*Required Information not given.
1496	Clover	Garden State Seed Co., Irvington, N. J. Waltham Supply Co., Waltham White, (*).....	L 99.00 F 99.14	0.20 0.43	0.55 0.18	0.25 0.25	80-10 70-24	4/1955 6/1955	*Required Information not given.
519	Redtop	Hyde Park Seed Corp., New York, N. Y. Brookline Park Department, Brookline No. 5452.....	L 95.80 F 94.04	0.50 0.97	2.40 4.24	1.30 0.75	90.00 83.00	3/1955 5/1955	Inert Matter exceeds that stated
S-551	Buckwheat	John D. Lyon, Inc., Cambridge, Mass. Metropolitan District Commission, Ponkapoag Golf Course, Canton (*), No. 61073.....	L 99.00 F 99.81	0.20 0.01	0.80 0.18	0.00 0.00	90.00 88.00	1/1955 5/1955	*Variety required unless there is a statement "Variety Unknown."
S-553	Ryegrass	B. T. Perennial, No. 01073.....	L 98.00 F 99.76	0.08 0.07	0.18 0.17	0.00 0.00	90.00 93.00	1/1955 6/1955	Given formula less than 100%.

592	Fescue	Northrup, King & Co., Minneapolis, Minn. John D. Lyon, Inc., Cambridge Chewings, No. R 5218.....	L F	95.73 95.48	1.74 1.88	0.83 0.31	1.70 2.33	85.00 73.00	3/1955 6/1955	Germination below that stated.
629	Clover	Pedigreed Seed Co., New York City, N. Y. William Casey Store, Milford Ladino, White, (*).....	L F	99.04 99.47	0.20 0.32	0.15 0.13	0.61 0.08	Inc. HS 90.00 79-10	2/1955 5/1955	*Required information not stated. Percentage of Germination and hard seed must be listed separately.
631	Clover	White, No. JPS.....	L F	99.45 91.89	0.02 7.28	0.05 0.30	0.48 0.53	Inc. HS 85.00 88-2	3/1955 5/1955	Percentage of germination and hard seed must be listed separately. Purity below that stated. Weed Seed exceeds that stated.
483	Red Fescue	Philadelphia Seed Co., Philadelphia, Pa. Philadelphia Seed Co., Warehouse, Charlestown Creeping, No. M 567.....	L F	98.10 95.00	0.04 0.50	1.84 4.45	0.02 0.05	92.00 93.00	2/1955 5/1955	Purity below that stated. Inert Matter exceeds that stated.
485	Redtop	Philadelphia Seed Co., Warehouse, Charlestown No. F-194.....	L F	98.00 95.42	0.25 0.19	1.55 3.96	0.20 0.43	90.00 91.00	2/1955 5/1955	Purity below that stated. Inert Matter exceeds that stated.
S-1001	Clover	Wm. G. Scarlet & Co., Baltimore, Md. Belchertown State School, Belchertown Medium Red, No. 10232 (Origin— Pennsylvania)	L F	99.68 99.78	0.05 0.02	0.11 0.12	0.16 0.08	80-15 81-13	2/1955 5/1955	Noxious weeds not declared, but 15 Buckhorn plantain per ounce found.
S-940	Brome Grass	Gardner State Hospital, East Gardner No. 928.....	L F	90.00 83.20	0.20 0.46	9.80 16.34	0.00 0.00	90.00 94.00	10/1954 4/1955	Purity below that stated. Inert Matter exceeds that stated.
953	Redtop	Frank Howard, Inc., Pittsfield No. 810.....	L F	87.00 75.94	1.20 0.99	9.80 21.10	2.00 1.97	85.00 95.00	2/1955 5/1955	Purity below that stated. Inert Matter exceeds that stated.
S-965	Clover	Northampton State Hospital, Northampton Aislele, No. 809.....	L F	99.25 99.45	0.20 0.36	0.05 0.08	0.05 0.11	80-10 75-21	2/1955 4/1955	Given formula less than 100%.
S-506	Oats	Phillips Wild Life Laboratory, Upton Victor, No. 8658.....	L F	99.00 99.80	0.20 0.00	0.80 0.20	0.00 0.00	90.00 73.00	1/1955 5/1955	Germination below that stated.
S-505	Rye	Abuzzi, No. 10236.....	L F	97.00 97.30	0.20 0.15	2.70 2.52	0.10 0.03	85.00 85.00	11/1954 5/1955	Noxious weeds exceeds that stated. 54 Corncockle and 14 Wild Onion perb. found.

Results of Inspection and Analyses of Field Seeds—Concluded

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed, Origin and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
S-503	Sudan Grass	No. 9346.....	L 99.00 F 99.75	0.20 0.14	0.80 0.51	0.00 0.00	90.00 63.00	11/1954 7/1955	Germination below that stated.
S-502	Vetch	Hairy, No. 9466.....	L 98.50 F 98.92	0.20 0.00	1.20 1.02	0.10 0.06	85-5 82-14	2/1955 5/1955	Noxious weeds not declared, but 12 Corn Cockle per lb. found.
S-1428	Alfalfa	State Farm, So. Bridgewater No. 9675..... (Origin—Utah)	L 99.50 F 99.90	0.05 0.02	0.40 0.04	0.50 0.04	80-6 88-2	2/1955 6/1955	Given formula exceeds 100%.
584	Fescue	Twin City Supply Co., Everett Ky. 31, No. 9141.....	L 99.00 F 99.57	0.50 0.06	0.25 0.19	0.25 0.18	85.00 62.00	2/1955 5/1955	Noxious weeds exceeds that stated. 12 Wild Onion, 4 Buckhorn plantain, 1 Mustard per ounce found. Germination below that stated.
1012	Orchard Grass	The Stanford Seed Co., Buffalo, N. Y. Southbridge Grain Co., Southbridge No. 2983.....	L 88.88 F 92.62	Trace 0.00	10.72 6.99	0.40 0.39	98.00 80.00	2/1955 5/1955	Germination below that stated.
900	Alfalfa	Whitney Seed Co., Buffalo, N. Y. Amherst Farmers Supply Co., Amherst B. T. Cert. Ranger, No. 2147..... (Origin—*)	L 99.88 F 99.82	0.02 0.05	0.10 0.13	0.00 0.00	90.00 95.00	2/1955 5/1955	*Required information not given.
420	Alfalfa	Beacon Grain Store, Fall River Grimm, No. 2152..... (Origin—S. Dakota)	L 99.45 F 99.82	0.14 0.01	0.18 0.10	0.22 0.07	72-18 80-13	1/1955 4/1955	Given formula less than 100%.
512	Alfalfa	Farm Bureau, Inc., Waltham B. T. Cert. Ranger, No. 2147..... (Origin—*)	L 99.88 F 99.60	0.02 0.00	0.10 0.40	0.00 0.00	90.00 93-1	2/1955 5/1955	*Required information not given.
513	Clover	Medium Red, No. 50668..... (Origin—*)	L 99.86 F 99.85	0.04 0.04	0.06 0.08	0.04 0.03	68-21 77-9	3/1955 5/1955	*Required information not given.
973	Clover	Haley's Grain Store, Palmer Medium Red, No. 50664..... (Origin—*)	L 99.58 F 99.46	0.06 0.16	0.28 0.17	0.08 0.21	78-12 78-6	1/1955 4/1955	*Required information not given.
967	Redtop	No. 40568.....	L 94.80 F 92.56	0.60 0.48	3.80 4.68	0.80 2.28	85.00 92.00	2/1955 4/1955	Other Crop Seed exceeds that stated
975	Birdsfoot Trefoil	*Imported, No. 5984.....	L 99.08 F 99.57	0.06 0.19	0.02 0.12	0.84 1.12	67-13 69-23	1/1955 4/1955	*Variety required unless there is a statement "Variety Unknown." "Imported" not a variety.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261 C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found					
1144	Comstock, Ferre & Co., Wethersfield, Conn. Weld & Beck, Southbridge Green Turf All Purpose Mixture, No. 2807				L F	0.38 0.51	8.97 6.01	0.00 0.82	3/1955 8/1955	Other Crop Seed not declared but 0.82% found.
	Components:									
	Domestic Ryegrass.....	34.66	32.79	90.00						
	Creeping Red Fescue.....	22.68	20.33	90.00						
	Redtop.....	9.60		90.00						
	Kentucky Bluegrass.....	8.45	10.58	80.00						
	Highland Bentgrass.....	7.92		90.00						
	Rough Bluegrass.....	5.37	6.05	85.00						
	White Dutch Clover.....	1.97	2.03	80.00						
	Agrostis spp. (Highland bent & Redtop)	.....	20.83	.....					
490	Thomas F. Culkeen, Charlestown, Mass. City of Boston, Franklin Field, Dorchester 100 $\frac{1}{2}$ Mixture, (*)				L F	0.30 0.44	3.80 1.34	0.39	3/1955 5/1955	*Required information not given. Declared but not found.
	Components:									
	Colonial Bent.....	34.30	.....	90.00						
	Redtop.....	32.20	.....	90.00						
	Chewings Fescue.....	29.40	28.66	90.00						
	Agrostis spp. (Highland Bent and Redtop)	.....	69.17	.....					
489	City of Boston, Franklin Field, Dorchester 500 Mixture, (*)				L F	0.30 0.33	1.30 4.25	0.33	3/1955 5/1955	*Required information not given. Inert Matter exceeds that stated. Percentage below that stated. Declared but not found. Percentage exceeds that stated. Germination below that stated. Highland bent found but not declared.
	Components:									
	Creeping Red Fescue.....	39.60	26.85	85.00						
	Redtop.....	39.20	.....	90.00						
	Colonial Bent.....	19.60	.....	90.00						
	Agrostis spp. (Highland bent & Redtop)	.....	68.24	.....					

Thomas F. Culkeen, Charlestown, Mass.

City of Boston, Franklin Field, Dorchester
12,000 Mixture, (*)

488

Components:	L		F	L		F	3/1955 5/1955	*Required information not given.
Kentucky Bluegrass	42.30	48.40	85.00	96.13	6.30	0.07		
Chewings Fescue	24.75		90.00		3.67			
Perennial Ryegrass	16.60	16.02	90.00					
Redtop	9.80	11.48	90.00					
Festuca spp. (Creeping Red Fescue & Chewings)		20.23						

Lowell Park Department Warehouse, Lowell

599

Special Mixture, (*)	L		F	L		F	2/1955 7/1955	*Required information not given.
Components:								
Chewings Fescue	29.40		90.00		6.24	0.47		
Kentucky Bluegrass	25.50	27.73	80.00	96.24	3.10	0.30		
Creeping Red Fescue	19.62		90.00					
Poa Trivialis	13.52	14.63	90.00					
Colonial Bent	4.91		90.00					
Festuca spp. (Creeping Red Fescue & Chewings)		46.66						
Highland Bent		7.22						
			59.00					

Declared but not found

Found but not declared.
Germination below that stated.

Druid Hill Park Seed Corp., Baltimore, Md.

Boston Supply Co., Inc., Boston

1402

Elk Park Mixture, No. 45	L		F	L		F	4/1955 5/1955	Given formula total less than 100%.	Other Crop Seed exceeds that stated.	Percentage below that stated.	Percentage exceeds that stated.
Components:											
Domestic Ryegrass	68.72	63.04	80.00		0.90	0.40					
Perennial Ryegrass	21.40	21.84	80.00								
Alta Fescue	5.00	6.30	80.00		0.37	1.16					

Eastern States Farmers' Exchange, Inc.

West Springfield, Mass.

Eastern States Farmers' Exchange, Inc., Worcester

1064

Velvet Green, No. 1031	L		F	L		F	1/1955 6/1955	Components not listed in order of predominance.
Components:								
Kentucky Bluegrass	34.32	35.36	82.00	93.50	6.25	0.03		
Creeping Red Fescue	44.32	42.77	90.00	93.55	6.39	....	
Colonial Bentgrass	4.91	5.50	90.00					
Domestic Ryegrass	9.95	9.92	90.00					

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture. Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
1420	Garden State Seed Co., Irvington, N. J. American Hardware Co., Lawrence White Clover Mixture, No. 341-17					L 44.65 F	0.60 54.95	0.60 0.36	0.10 0.04	2/1955 6/1955	Weed Seed exceeds that stated.
	Components: White Clover..... Suckling Clover.....	42.80 55.90	44.65	75-5 75-5	77-7						Suckling Clover a weed in Mass.
1429	Brockton Hardware & Supply Co., Brockton Blue Edge Mixture, No. 577-40.					L 94.63 F	0.45 0.68	4.41 4.05	0.15 0.64	5/1955 8/1955	Percentage below that stated. Germination below that stated. Germination below that stated. Germination below that stated. Germination below that stated. Hard Seed must be listed separately.
	Components: Perennial Ryegrass..... Common Ryegrass..... Meadow Fescue..... Red Fescue..... Redtop..... Poa Trivialis..... Kentucky Bluegrass..... White Clover.....	27.44 14.80 14.55 9.50 9.20 9.00 8.50 2.00	0.83 43.20 14.96 10.99 6.82 8.68 7.38 1.77	90.00 90.00 90.00 90.00 85.00 90.00 75.00 90.00	83.00 83.00 12.00 72.00 81.00 62.00 73.00 64-8						
840	Budd D. Hawkins, Reading, Vt. Speiser Hdw Co., Westfield Speiser's Special Grass Mixture, (*)					L 98.87 F	0.10 0.14	0.10 0.29	0.70	1/1955 4/1955	*Required information not given. Given formula total less than 100%. Other Crop Seed not declared but .70% found.
	Components: Common Ryegrass..... Perennial Ryegrass..... Ky. 31 Fescue..... White Dutch Clover..... Lolium spp..... (Common & Perennial Ryegrass)	84.85 9.98 3.92 0.99 .....	..... ..... 3.48 0.84 94.55	96.00 91.00 85.00 84.00 .....	..... ..... 88.00 88-1 93.00						

Independence Hall Seed Co., Baltimore, Md.

1431 Boston Supply Co., Boston
Independence Hall Grass Seed, (All
Perennial Mixture), No. 25-N

Components:

Kentucky Bluegrass.....	15.00	13.24	75.00	81.00
Creeping Red Fescue.....	14.60	.....	80.00	.....
Certified Ky 31 Fescue.....	14.60	.....	80.00	.....
Chewings Fescue.....	13.00	.....	80.00	.....
Alta Fescue.....	12.00	.....	80.00	.....
Perennial Ryegrass.....	9.95	12.69	80.00	92.00
Meadow Fescue.....	7.74	6.66	80.00	87.00
White Clover.....	3.00	3.45	60.00	76-7
Suckling Clover.....	1.90	.....	60.00	.....
Festuca spp. (Creeping Red and Chewings)	.....	25.15	.....	78.00
Alta & Ky 31 Fescue.....	.....	28.99	.....	88.00

1403 White Hop Clover Mixture, IHSP.

Components:

New Zealand White Clover.....	50.00	54.91	60-20	75-13
Hop Clover.....	47.00	.....	60-20	.....

Independence Hall Seed Co., Baltimore, Md.

1432 Boston Supply Co., Boston
White-Hop Clover Mixture, IHSP

Components:

White Clover.....	50.00	53.65	60-20	81-4
Hop Clover.....	47.00	.....	60-20	.....

D. Landreth Seed Co., Philadelphia, Pa.

251 Smith Mills Hardware Co., No. Dartmouth
Popular Mixture, No. 520

Components:

Domestic Kyegrass.....	29.79	27.50	90.00	90.00
Timothy.....	14.92	16.86	90.00	71.00
Perennial Ryegrass.....	13.42	15.37	95.00	90.00
Chewings Fescue.....	15.19	14.66	90.00	95.00
Alta Fescue.....	7.93	8.40	90.00	93.00
Redtop.....	5.13	5.12	85.00	83.00
Kentucky Bluegrass.....	1.66	1.67	82.00	79.00
White Dutch Clover.....	4.05	3.60	81-16	69.5-16

Given formula total less than 100%
Weed Seed exceeds that stated.

L 0.29 2.90 4.97 2/1955
F 90.18 **3.34** 2.49 3.99 8/1955

Suckling Clover a weed in Mass.

L 0.50 1.90 0.60 4/1955
F 54.91 **44.89** 0.05 0.15 6/1955

Hop Clover a weed in Mass.

L 0.50 1.90 0.60 2/1955
F 53.65 **45.70** 0.14 0.51 6/1955

Hop Clover a weed in Mass.

Components not listed in order of predominance.

L 0.30 6.98 0.63 2/1955
F 93.18 0.15 5.79 0.88 4/1955

Germination below that stated.

Germination below that stated.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
1145	Lee Patten Seed Co., Jersey City, N. J. Weld & Beck Co., Southbridge Verigreen Lawn Seed Mixture, No. V55.....					L F 94.16	0.43 0.19	3.27 5.22	0.65 0.43	2/1955 7/1955	
	Components:										
	Creeping Red Fescue.....	32.34		90.00							
	Chewings Fescue.....	28.42		90.00							
	Kentucky Bluegrass.....	17.10	21.24	80.00	79.00						
	Perennial Ryegrass.....	14.85	13.81	90.00	92.00						
	Colonial Bentgrass.....	2.94		90.00							
	Festuca spp.....		56.29		95.00						Declared but not found.
	(Creeping Red & Chewings Fescue)										
	Highland Bentgrass.....		2.82		97.00						Found but not declared.
S-594	John D. Lyon, Inc., Cambridge, Mass. Department of Public Works, Camp Myles Standish, Taunton Plot Mixture, No. 03065.....					L 93.20 F 94.92	0.89 0.94	5.20 4.02	0.71 0.12	1/1955 6/1955	Components not listed in order of predominance.
	Components:										
	Chewings Fescue.....	49.80		70.00							Declared but Creeping Red and Chewings found.
	Kentucky Bluegrass.....	17.00	17.63	80.00	86.00						
	Redtop.....	18.40	19.45	90.00	72.00						
	Domestic Ryegrass.....	8.00	7.28	90.00	90.00						
	Festuca spp.....		50.56		78.00						Germination below that stated.
	(Creeping Red & Chewings)										
S-1233	Department of Public Works, Storehouse, Beverly Plot Mixture, No. 3064.....					L 90.40 F 91.74	0.95 1.24	7.55 6.17	1.10 0.85	1/1955 7/1955	

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
John D. Lyon, Inc., Cambridge, Mass.—(Continued)											
Mass. Department of Public Works, Storehouse, Maynard											
S-1455	Plot Mixture, (*)		L F			93.20 93.56	0.92 0.90	5.17 4.18	0.71 1.36	1/1955 8/1955	*Required information not given.
	Components:										Percentage exceeds that stated.
	Chewings Fescue.....	49.80	59.77	70.00	75.00						
	Redtop.....	18.40	14.57	90.00	88.00						
	Kentucky Bluegrass.....	17.00	14.66	80.00	84.00						
	Domestic Ryegrass.....	8.00	5.56	90.00	80.00						
S-1456	Slope Mixture, (*)		L F			96.55 98.10	0.94 0.95	2.19 0.80	0.32 0.15	1/1955 7/1955	*Required information not given
	Components:										Germination below that stated.
	Alfa Fescue.....	29.10	30.81	85.00	93.00						
	Chewings Fescue.....	24.25	24.84	85.00	69.00						
	Domestic Ryegrass.....	19.60	18.62	90.00	88.00						
	Redtop.....	13.80	12.74	90.00	86.00						
	Alsike Clover.....	9.80	11.09	70.20	76-16						
Mass. Department of Public Works, Storehouse, Middleboro											
S-1427	Plot Mixture, No. 03066.....		L F			90.40 92.66	0.85 1.09	7.55 6.01	0.10 0.24	1/1955 6/1955	Components not listed in order of predominance. Given formula total less than 100%.
	Components:										Declared but Rainer with some Chewings found.
	Chewings Fescue.....	49.80		70.00							Declared but Redtop and High- land bentgrass found.
	Kentucky Bluegrass.....	17.00	17.85	80.00	86.00						
	Redtop.....	18.40		90.00							
	Domestic Ryegrass.....	5.20	5.35	90.00	96.00						
	Festuca spp..... (Rainer with some Chewings found)		47.54		78.00						
	Agrostis spp..... (Redtop & Highland Bentgrass)		21.92		87.00						

Department of Public Works Depot, Newburyport

S-1230	Plot Mixture, (*)	L	93.10	0.92	5.27	0.71	2/1955 7/1955	*Required information not given.
		F	94.14	1.02	4.58	0.26		
	Components:							
	Creeping Red Fescue		49.80	43.79	70.00	84.00		
	Redtop		18.40	18.59	90.00	82.00		Declared but Redtop and Highland Bentgrass found.
	Kentucky Bluegrass		17.00	18.59	80.00	88.00		
	Domestic Rye		7.90	9.10	90.00	75.00		Germination below that stated.
	Agrostis spp.		.....	22.66	.....	.....
	(Redtop and Highland Bentgrass)							

Massachusetts Department of Public Works,

1444	Newburyport							
	Plot Mixture, (*)	L	90.40	0.95	7.55	1.10	1/1955 7/1955	*Required information not given.
		F	92.50	1.37	5.63	0.50		
	Components:							
	Chewings Fescue		49.80	.....	70.00	.....		Declared but Ranier and Chewings Fescue found.
	Redtop		18.40	.....	90.00	85.00		Declared but Redtop and Highland Bent found.
	Kentucky Bluegrass		17.00	18.33	80.00	93.00		
	Domestic Ryegrass		5.20	6.06	90.00	82.00		
	Agrostis spp.		.....	19.91	.....	.....
	(Redtop & Highland Bent)							
	Festuca spp.		.....	48.20	.....	75.00		
	(Rainer & Chewings Fescue)							

Massachusetts Department of Public

S-1231	Works Depot, Newburyport							
	Slope Mixture (*)	L	96.55	0.84	1.79	0.82	2/1955 7/1955	*Required information not given.
		F	97.45	0.66	1.51	0.38		
	Components:							
	Alta Fescue		29.10	28.31	85.00	84.00		
	Chewings Fescue		24.25	22.16	85.00	83.00		
	Domestic Ryegrass		19.60	17.25	90.00	87.00		Declared but Redtop and Highland Bent foundgrass.
	Redtop		13.80	.....	90.00	74-21		
	Alsike		9.80	12.34	70-20	84.00		
	Agrostis spp.		.....	17.39	.....	.....
	(Redtop & Highland Bent)							
S-1443	Slope Mixture (*)	L	96.55	0.32	0.88	2.25	1/1955 7/1955	*Required information not given.
		F	97.05	0.94	1.30	0.71		

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
John D. Lyon, Inc., Cambridge, Mass.—(Continued) Massachusetts Department of Public Works Dépot, Newburyport											
Components:											
S-595	Plot Mixture, No. 03062.....					L	93.20	0.89	5.20	1/1955	Declared but Redtop and High land Bentgrass found
	Components:					F	93.72	0.85	4.33	6/1955	
	Chewings Fescue.....	49.80		70.00					0.71		
	Kentuck Bluegrass.....	17.00	17.95	80.00	86.00				1.10		
	Redtop.....	18.40	16.85	90.00	82.00						
	Domestic Ryegrass.....	8.00	8.61	90.00	93.00						
	Festuca spp..... (Creeping Red and Chewings)		50.31		76.00						
S-1227	Plot Mixture, Special, No. 03062.....					L	93.20	0.89	5.20	1/1955	Components not listed in order of predominance. Declared but Creeping Red and Chewings found.
	Components:					F	95.15	0.74	4.03	7/1955	
	Chewings Red Fescue.....	49.80		70.00					0.71		
	Kentucky Bluegrass.....	17.00	19.90	80.00	85.00				0.03		
	Redtop.....	18.40	20.23	90.00	91.00						
	Domestic Ryegrass.....	8.00	8.14	90.00	92.00						
	Festuca spp..... (Creeping Red & Chewings)		46.88		78.00						

Metropolitan District Commission,
Water District, Section, Medford

S. 1228

Special Mixture, No. 03170.

Components:

Illabe Fescue.....	44.10	41.45	90.00	96.00					
Redtop.....	27.60	.....	90.00	.....				
Highland Colonial Bent.....	24.50	.....	90.00	.....				
Agrostis spp.....	.....	53.94	.....	66.00					
(Redtop & Highland bent)									

Northern Seed Co., Providence, R. I.

Green Thumb Garden Centre, North Plymouth

1291

Park View Mixture, No. 113.

Components:

Domestic Ryegrass.....	47.20	55.22	90.00	97.00					
Ky 31 Fescue.....	21.85	22.02	85.00	99.00					
Timothy.....	15.20	15.53	85.00	85.00					
Redtop.....	3.12	2.37	72.00	88.00					
Mixed Clover (1.35% Suckling).....	1.97	.....	85.00	.....				
White Clover.....	0.62	2.19	85.00	77.11					
			(9% HS)						
			(4% HS)						

Pierce Hardware Co., Taunton

533

Seed Mixture, No. 194.

Components:

Chewings Fescue.....	29.40	.....	90.00	.....				
Illabe Fescue.....	24.00	.....	90.00	.....				
Perennial Rye.....	22.50	27.15	90.00	91.00					
Kentucky Bluegrass.....	8.00	9.82	75.00	77.00					
Colonial Bent.....	4.80	.....	90.00	.....				
Clover.....	4.50	.....	82.8	.....				
Highland Bent.....	.....	6.80	.....	80.00					
Festuca spp.....	.....	49.66	.....	95.00					
(Chewings & Illabe)									
White Clover.....	.....	0.85	.....	81.3					

1/1955
7/1955
Other Crop Seed not declared
but 1.34% found.

L 96.20 0.75 3.05
F 95.39 0.67 2.60
1.34

Germination below that stated.

3/1955
7/1955
Weed Seed exceeds that stated.

L 89.96 0.60 8.81
F 97.33 1.40 0.48
1.25
0.79

Mixed Clover not sufficient. Variety must be stated.
Percentage exceeds that stated.
*Suckling Clover a weed in Mass.

3/1955
6/1955
Weed Seed exceeds that stated.

L
F 94.28 0.40 3.90
0.34 3.68
2.50
0.34

Declared but not found.
Clover not sufficient. Variety must be stated.
Found but not declared.

Percentage below that stated.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
The Page Seed Co., Greene, N. Y.											
1295	Lawrence Bros., Falmouth Green Park Mixture, No. L 141054.					L F 92.61	0.12 0.20	8.30 7.08	0.10 0.11	11/1954 8/1955	
	Components:										
	Perennial Ryegrass.....	24.40	26.78	90.00	95.00						
	Kentucky Bluegrass.....	24.36	25.50	80.00	78.00						
	Poa Trivialis.....	15.92	12.44	90.00	65.00						Germination below that stated.
	Redtop.....	12.15	13.25	90.00	84.00						
	Chewings Fescue.....	10.20	10.20	90.00	79.00						Germination below that stated.
	White Clover.....	4.45	4.44	90.00	90.4						
1113	Weld & Beck Co., Southbridge Marvelawn Mixture, No. L 141254.					L F 91.49	0.20 0.36	5.80 7.00	3.93 1.15	11/1954 6/1955	Components not listed in order of predominance. Given formula total less than 100%.
	Components:										
	Perennial Ryegrass.....	31.75	28.56	90.00	99.00						
	Poa trivialis.....	11.18	12.44	85.00	86.00						
	Redtop.....	6.90	10.45	90.00	82.00						
	Timothy.....	9.24	10.32	90.00	91.00						
	Creeping Red Fescue.....	8.20	16.43	90.00	82.00						Percentage exceeds that stated.
	White Clover.....	4.30	4.71	84.00	83.9						
	Kentucky Bluegrass.....	8.50	8.58	80.00	85.00						
11142	Special Shady Park, No. L 14854.					L F 94.90	0.20 0.20	3.40 4.83	0.04 0.07	11/1954 5/1955	Inert Matter exceeds that stated.
	Components:										
	Perennial Ryegrass.....	27.60	23.52	90.00	98.00						
	Chewings Fescue.....	22.65	23.86	90.00	95.00						
	Poa Trivialis.....	22.46	21.89	75.00	71.00						
	Colonial Bentgrass.....	10.00	..	85.00	..						
	Kentucky Bluegrass.....	7.50	8.02	80.00	85.00						Declared but not found.
	White Clover.....	6.39	6.39	84.1	91.4						
	Highland Bent.....	6.15	11.22	..	92.00						Found but not declared.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
Pedigreed Seed Co., New York City, N. Y. (Continued)											
1430	Charles B. Graves, Brockton Century Park, No. 0301-5.....					L 86.89	0.50	7.14	1.00	4/1955	Weed Seed exceeds that stated. Inert Matter exceeds that stated. Other Crop Seed exceeds that stated.
						F 86.89	2.22	9.30	1.59	5/1955	
Components:											
	Common Ryegrass.....	41.99	42.50	90.00	92.00						
	Ky 31 Fescue.....	24.96	21.99	80.00	85.00						
	Timothy.....	10.97	10.83	85.00	85.00						
	Perennial Ryegrass.....	10.49	10.25	80.00	92.00						
	Suckling Clover.....	1.81		80.00	IHS						
	White Clover.....	1.14	1.32	80.00	IHS"76-7						
Philadelphia Seed Co., Philadelphia, Pa.											
486	Philadelphia Seed Co., Warehouse, Charlestown Imperial Lawn Seed, No. 516.....					L 97.01	0.10	1.80	0.32	1/1955	Suckling Clover a weed in Mass. Hard Seed must be stated separately.
						F 97.01	0.24	2.43	0.32	5/1955	
Components:											
	Imperial Kentucky Bluegrass.....	58.80	57.15	90.00	96.00						
	Imperial Redtop.....	19.60		90.00							
	Chewings Fescue.....	9.90	11.08	90.00	90.00						
	Certified Bentgrass.....	9.80		90.00							
	Agrostis spp..... (Red Top & Highland Bent)		28.78		89.00						
Wm. G. Scarlet & Co., Baltimore, Md.											
S-1229	Massachusetts Department of Public Works Maintenance, Newburyport Grass Seed Mixture, No. 10681.....					L 96.14	0.50	5.05	0.30	4/1955	Certified Bentgrass not sufficient. Variety must be stated.
						F 96.14	0.36	3.37	0.13	7/1955	
Components:											
	Ky 31 Fescue.....	33.95	33.44	85.00	95.00						
	Chewings Fescue.....	24.25	23.05	90.00	94.00						
	Ky Bluegrass.....	21.25	24.20	80.00	76.00						
	Per. Ryegrass.....	14.00	15.45	90.00	96.00						

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer With or Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks						
		Label	Found	Label	Found												
I. Teweles Seed Co., Milwaukee, Wisc.																	
Devatur & Hopkins Co., Boston																	
Earth Carpet-Gold Label-All Perennial, No. X 943																	
1401	Components:					L					Components not listed in order of predominance.						
	Kentucky Bluegrass	34.02	37.67	75.00	84.00	F	0.23	7.07	0.13	1/1955							
	Creeping Red Fescue	29.92	25.02	85.00	87.00		0.51	6.95	0.07	8/1955							
	Poa Trivialis	1.81	3.44	85.00	70.00												
	Perennial Ryegrass	19.95	18.95	90.00	93.00												
493	Bent Grass	6.87	7.39	90.00	86.00						Percentage exceeds that stated. Germination below that stated.						
	Highland bentgrass										Bentgrass not sufficient. Highland bentgrass found.						
	Earth Carpet-Red Label, No. X 973					L	0.20	2.44	0.55	1/1955	Components not listed in order of predominance.						
	Components:					F	0.76	2.61	4.64	6/1955	Crop Seeds exceed that stated.						
	Creeping Red Fescue	19.30	28.40	85.00	82.00						Percentage exceeds that stated. Declared but not found.						
622	Ky 31 Fescue	14.70	9.47	85.00	97.00						Percentage below that stated. Declared but not found.						
	Kentucky Bluegrass	8.51	11.59	75.00	96.00						Percentage below that stated. Declared but not found.						
	Perennial Ryegrass	18.95	11.59	90.00	96.00						Percentage below that stated. Declared but not found.						
	Domestic Ryegrass	34.85	19.60	90.00	96.00						Germination below that stated. Declared but not declared.						
	White Clover	0.50	0.19	75-18	56-15						Found but not declared.						
Merion Bluegrass																	
Twin City Supply Co., Everett, Mass.																	
Twin City Supply Co., Everett																	
Truly Green Mixture, (*)																	
622	Components:					L	0.80	0.75	0.10	3/1955	*Required information not given.						
	Domestic Ryegrass	83.60	84.80	90.00	82.00	F	0.45	0.31	0.05	5/1955							
	Ky 31 Fescue	8.90	6.34	80.00	61.00						Germination below that stated.						
	Timothy	4.40	5.81	90.00	95.00												
	White Dutch Clover	1.45	1.75	70-10	76-11												

Vaughan's Seed Co., New York City, N. Y.

F. Alirevi & Sons, Boston

268

1/1955 Components not listed in order
4/1955 of predominance.

0.14

7.50
6.98

0.25
0.08

L
F 92.80

Components:

Kentucky Bluegrass.....	35.70	30.94	75.00	82.00
Highland Bent.....	17.65	.....	88.00	.....
Creeping Red Fescue.....	19.60	.....	90.00	.....
Fry Redtop.....	4.60	.....	85.00	.....
Chewings Fescue.....	14.70	.....	90.00	.....
Agrostis spp.....	.....	21.39	.....	86.00
Festuca sp.....	.....	40.47	.....	90.00
(Creeping Red & Chewings Fescue)	.....	.....	.....	.....

B. W. Brown Grain Co., Concord

Economy Mixture, (*)

445

1/1955 Components not listed in order
5/1955 of predominance.
*Required information not given.

0.62

4.30
2.25

0.40
0.25

L
F 96.88

Components:

Kentucky Bluegrass.....	8.00	8.48	75.00	87.00
Creeping Red Fescue.....	24.00	23.82	90.00	97.00
Perennial Ryegrass.....	14.50	20.16	90.00	96.00
Common Ryegrass.....	39.00	35.20	90.00	96.00
Kentucky 31 Fescue.....	9.80	9.22	88.00	85.00

Whitney Seed Co., Buffalo, N. Y.

Methie, Inc., Springfield

1028

1/1955 Given formula total less than
100%
5/1955 Other Crop Seed not declared
but 1.42% found.

1.42

1.95
3.99

0.40
0.86

L 97.65
F 93.73

Components:

Common Ryegrass.....	38.75	33.06	85.00	98.00
Kentucky 31 Fescue.....	19.50	16.91	80.00	80.00
Perennial Ryegrass.....	14.50	18.59	85.00	98.00
Kentucky Bluegrass.....	12.00	9.32	70.00	83.00
Timothy.....	9.80	12.84	80.00	83.00
White Clover.....	3.00	3.01	70.15	68.25

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
645	Woodworth Bradley Co., Inc., Providence, R. I.										
	William Skeese Fruit & Vegetable Garden, Seekonk										
	Gro-Green Mixture, No. 104.....										
	Components:										
	Italian Ryegrass.....	49.00	37.25	90.00	84.00						
	Timothy.....	19.60	21.12	90.00	94.00		0.50	6.55	...	1/1955	Components not listed in order of predominance.
	Kentucky Bluegrass.....	3.75	4.44	80.00	85.00		0.36	2.14	0.10	5/1955	
	Perennial Ryegrass.....	17.60	31.73	90.00	84.00						Percentage below that stated.
	Redtop.....	3.00	2.86	80.00	79.00						Percentage exceeds that stated.
						L F					

Results of Inspection and Germination of Vegetable Seeds Sections 261 B2 and 261 C.

Each separate container of Vegetable Seeds must be labeled to indicate plainly the kind of seed and variety and the name and address of the person who labeled such seed or who sells, offers, or exposes it for sale. For seeds that germinate less than the Massachusetts Standard, the label must also indicate the percentage of germination exclusive of hard seeds, percentage of hard seeds if present, calendar month and year the test was completed, and the words "Below Standard" in not less than 8-point type. Date of test shall not be more than nine months old, exclusive of the month in which the test was completed. Seed that has a false or misleading label may not be sold or offered for sale.

Six hundred and seventy-nine samples of vegetable seeds were received and tested in the laboratory; however, Table 3 includes only those samples that were found to be mislabeled with regard to requirements of the law.

The wholesaler's name, in all instances, and the germination for those samples of seed found below standard in germination are in boldface type. In samples for which the found germination is not in boldface, the germination is above standard but below germination stated.

Table 3

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Germination				
			Given		Found		Mass. Standard
			%	Date of Test	%	Month of Test	
32 F	Lettuce	Abbott & Cobb Co., Philadelphia, Pa. Antone Silva, Swansea					
		Great Lakes, Special No. 164	90	12/1954	79	3/1955	80
75 F	Cabbage	Associated Seed Growers, Inc., New Haven, Conn.					
		Pierce Hardware Co., Taunton Green Acre, No. 50445.....	89	10/1954	79	3/1955	75
205 F	Lettuce	M. L. Barbour & Sons, Yarmouth, Me. Robert Cassidy & Sons, Woburn					
		White Boston.....	90	11/1954	51	4/1955	80
27 F	Lettuce	Frederick W. Eberle, Albany, N. Y. Antone Silva, Swansea					
		Paris White Cos., No. 1407.....	85	10/1954	68	3/1955	80
812	Spinach	Chas. C. Hart Seed Co., Wethers- field, Conn.					
		Community Feed Stores, East Longmeadow New Long Standing Bloomsdale, No. 3782.....	85	12/1954	70	4/1955	60
1299	Pepper	Hyannis Hardware Co., Hyannis Hot Bull Nose.....	55	12/1954	40	6/1955	55
1461	Lettuce	Main St., Paint & Supply Co., Cochituate					
		Romaine or Cos	80	12/1954	59	7/1955	80
466	Carrot	Pires Hardware Co., Fall River Tendersweet.....	90	1/1955	69	5/1955	55
39 F	Spinach	Tri-State Seed Co., Philadelphia, Pa. Manuel Jacome, Swansea					
		Special Summer Savoy Long Standing.....	App. 85	10/1954	50	4/1955	60
29 F	Lettuce	Antone Silva, Swansea					
		Imperial 456.....	App. 85	10/1954	45	3/1955	80

FIELD TESTS OF VEGETABLE SEEDS TYPE AND VARIETY STUDIES—SECTION 261 H

Conducted by the Seed Laboratory*

This year marks the twentieth year that field tests have been conducted by the Seed Laboratory to determine the trueness-to-type of certain kinds of vegetable seed offered for sale in the State. Tests were run on Cabbage, Chinese Cabbage, Lettuce, Rutabaga and Turnip from an exhaustive collection made by the State Seed Inspector. These samples were taken at 60 retail establishments and represent the offerings of 27 wholesale seedsmen in the State.

Tests were made on 50 samples of Cabbage, 13 samples of Chinese Cabbage, 50 samples of Lettuce, 27 samples of Rutabaga, and 39 samples of Turnip. Lettuce was planted April 20. The Cabbage, Chinese Cabbage, and Rutabaga were planted May 27, and the Turnip was planted in July, following the maturity of the Lettuce. Ten days of hard cold rains followed the seeding of the Lettuce. The plantings did develop satisfactorily, however, and a good crop resulted, although a somewhat irregular one, due to the transplanting needed to fill the gaps in the low section of the field. All the plantings were made in duplicate and the duplicated plantings made at random. Authentic check samples were used for those that could be obtained. Normal cultural techniques were practiced, and satisfactory crops were grown.

With few exceptions, the vegetables were found to be true to the name as stated on the package. Desirability of the different lots of the same variety name, however, was a different matter. Many lots which were properly labelled certainly were not of equal merit as regards their marketable value. It is not the function of this laboratory to rate the various lots of seed under test, but merely to determine proper labelling practices.

Below listed are the lots of seed which were found not to conform to the name as stated on the package.

Table 4

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed and Lot Number, Dealer When Other than Wholesale Distributor, and Place Collected	Remarks
171	Cabbage	Joseph Breck & Sons, Inc., Boston, Mass. Red Rock.....	10% kohlrabi
1447	Turnip	W. Atlee Burpee Co., Philadelphia, Penna. Herman F. Davis, Merrimac White Egg, No. 6851.....	35% purple shoulders
157	Rutabaga	Chas. C. Hart Seed Co., Wethersfield, Conn. Conlon & Donnelly Co., Attleboro Macomber, No. 3774.....	100% off-type, flesh yellow with purple top.
908	Rutabaga	O. B. Parks, Westfield American Purple Top Yellow.....	7% turnip
634	Rutabaga	The Page Seed Co., Greene, N. Y. William Casey Store, Milford American Purple Top Yellow.....	8% turnip

* Waldo C. Lincoln, Jr., Research Instructor
Paul Korpita, Laboratory Assistant

STUDIES OF FLOWER SEEDS

Section 261 II

Conducted by the Seed Laboratory*

Nineteen fifty-five marks the twentieth year in which flower seed studies have been conducted by the Seed Laboratory to determine the quality of flower seed offered for sale in various retail outlets and to flower growers throughout the State. Seed of 363 lots, representing 49 genera packeted by 24 wholesalers or distributors, were obtained from 140 retailers or grower sources by the State Seed Inspectors. All samples, except four, were given germination tests in the laboratory, and all lots, except 24, were given trueness-to-type tests in the field. The lots not laboratory tested were three garden mixtures and one lot of *Statice*. Of the 24 lots not tested in the field, 7 were perennials, 9 biennials, 4 *Ipomeas*, and 4 *Lathyrus*:

<i>Ageratum</i>	7	<i>Didiscus</i>	1	<i>Nicotiana</i>	1
<i>Alyssum</i>	6	<i>Eschscholtzia</i>	5	<i>Papaver</i>	4
<i>Antirrhinum</i>	6	<i>Godetia</i>	1	<i>Petunia</i>	24
<i>Calendula</i>	13	<i>Gomphrena</i>	1	<i>Phlox</i>	8
<i>Callistephus</i>	28	<i>Gypsophila</i>	3	<i>Portulaca</i>	5
<i>Celosia</i>	4	<i>Helianthus</i>	6	<i>Reseda</i>	1
<i>Centaurea</i>	12	<i>Helichrysum</i>	2	<i>Rudbeckia</i>	2
<i>Convolvulus</i>	1	<i>Hunnemania</i>	1	<i>Salvia</i>	4
<i>Chrysanthemum</i>	3	<i>Iberis</i>	5	<i>Scabiosa</i>	9
<i>Clarkia</i>	2	<i>Impatiens</i>	4	<i>Statice</i>	1
<i>Cleome</i>	2	<i>Kochia</i>	1	<i>Tagetes</i>	46
<i>Cosmos</i>	17	<i>Linaria</i>	1	<i>Tithonia</i>	1
<i>Cynoglossum</i>	1	<i>Lobelia</i>	1	<i>Tropaeolum</i>	16
<i>Delphinium</i>	10	<i>Mathiola</i>	4	<i>Verbena</i>	3
<i>Dianthus</i>	4	<i>Mirabilis</i>	1	<i>Zinnia</i>	59
				Wild Flower Mixture....	3

Dates of sowing were June 2 and 3. Seeds were sown in 15-foot sections in the row with the exception of *Ageratum*, *Alyssum*, *Antirrhinum*, *Chrysanthemum*, *Clarkia*, *Convolvulus*, *Cynoglossum*, *Dianthus*, *Didiscus*, *Godetia*, *Hunnemania*, *Iberis*, *Linaria*, *Lobelia*, *Mathiola*, *Petunia*, *Phlox*, *Portulaca*, *Reseda*, *Rudbeckia*, *Scabiosa*, *Statice* and *Verbena*, which were sown in 10-foot sections. In most instances, one packet of seed was sufficient to plant the desired section.

Germination tests were made in the laboratory for all samples of seed, except three flower mixtures and one lot of *Statice*. The results of the germination tests are listed in Table 5 for samples found unsatisfactory in the field.

The weather during the field trials was quite variable. During the critical field germination period the weather was good, but thereafter followed a long period of extremely hot weather. The combination of wet heavy land with the hot temperatures was conducive to a heavy incidence of disease. Notable in this case were the *Delphinium*, *Callistephus*, and *Iberis*. The *Tagetes* were extremely late in flowering, but with the first killing frost carrying well into October, all necessary records were obtained. The following table lists those samples that were found in the field test that differed in performance from that stated on the seed packet.

*Waldo C. Lincoln, Jr., Research Instructor
Paul Karpita, Laboratory Assistant

Table 5. Flower Seed Inspection

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected and Variety of Seed	Laboratory Germination %	Field Tests Performance
194	Petunia	Joseph Breck & Sons, Inc., Boston, Mass. Single Fringed Flame.....	76	50% off-type (Purple color)
1370	Scabiosa	W. Atlee Burpee Co., Philadelphia, Pa. Needham Hardware Co., Needham Blue, Pink & White.....	60	No Blue found in sample
733	Ageratum	Chas. C. Hart Seed Co., Wethersfield, Ct. Sherman Hardware & Paint Co., Somerville Blue Perfection.....	56	100% dwarf type
731	Mathiola	Finest Dwarf Mixed.....	23	Too few plants for a performance test
709	Ageratum	Taunton Hardware Co., Taunton Blue Perfection.....	26	100% dwarf type
1384	Tropaeolum	Budd D. Hawkins, Reading, Vt. David Dickson, Groton Dwarf Mixed.....	88	11% not dwarf
474	Portulaca	Hygrade Seed Co., Fredonia, N. Y. Hugo A. Dubuge, Fall River Double & Single Mix.....	88	90% single
676	Papaver	Mandeville & King Co., Rochester, N. Y. G. F. Bunker Co., Brighton Shirley, Double Rose Pink.....	86	9% single or White
678	Portulaca	Crowley Hardware Co., Everett Double and Single Moss Rose.....	81	75% single
797	Petunia	Northrup, King & Co., Minneapolis, Minn. Danvers Hardware Co., Danvers Rosey Morn.....	69	Mixture of 4 types
1327	Callistephus	Sears, Roebuck & Co., Chicago, Ill. Sears, Roebuck & Co., Cambridge Giant Branching Blue.....	83	14% Red
1393	Zinnia	Vaughan's Seed Store, New York, N. Y. Miller Florest, Arlington Peppermint Stick Mix.....	87	13% showed no sign of Peppermint Stick striping.
1318	Tagetes	C. H. Symmes & Co., Winchester Dwarf Double French.....	92	20% single flowered
754	Impatiens	Woodruff's Triple "T" Seed Co., Wethersfield, Ct. Camellia Flowered.....	97	50% not Camellia flowered

Table 6. Summary, by Wholesalers, of the Performance of Flower Seeds in the Field

Seeds Packeted by	Total No. Samples Tested	No. Samples Satisfactory	No. Samples Unsatisfactory
Ball, George K., Co..... West Chicago, Ill.	6	6	0
Breck, Joseph, & Sons, Inc..... Boston, Mass.	30	29	1
Burbank, Luther, & Co..... Philadelphia, Pa.	4	4	0
Burpee, W. Atlee, Co..... Philadelphia, Pa.	24	23	1
Comstock, Ferre & Co..... Wethersfield, Conn.	7	7	0
Crosman Seed Corp..... Rochester, N. Y.	5	5	0
Ferry-Morse Seed Co..... Detroit, Mich.	42	42	0
Fredonia Seed Co..... Fredonia, N. Y.	14	14	0
Germain's, Inc..... Los Angeles, Cal.	2	2	0
Harris, Joseph, Co..... Rochester, N. Y.	13	13	0
Hart, Charles C., Seed Co..... Wethersfield, Conn.	35	32	3
Hawkins, Budd D..... Reading, Vt.	4	3	1
Hygrade Seed Co..... Fredonia, N. Y.	9	8	1
Mandeville & King Co..... Rochester, N. Y.	55	53	2
Mitchell, Henry F., Co..... Philadelphia, Pa.	1	1	0
Northrup, King & Co..... Minneapolis, Minn.	21	20	1
The Page Seed Co..... Greene, N. Y.	4	4	0
Pelletized Seed Co..... Wynnewood, Pa.	1	1	0
Rice, Jerome B. Seed Co..... Cambridge, N. Y.	28	28	0
Rice, J. B., Jr., Inc..... Shushan, N. Y.	1	1	0
Ross Bros. Co..... Worcester, Mass.	11	11	0
Sears, Roebuck & Co..... Chicago, Ill.	5	4	1
Vaughan's Seed Store..... New York, N. Y.	19	17	2
Woodruff, S. D. & Sons..... Orange, Conn.	18	18	0
Woodruff's Triple "T"..... Orange, Conn.	4	3	1
	363	349	14

Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Abbott & Cobb Co..... Philadelphia, Pa.	5	4	1						
Associated Seed Growers, Inc..... Milford, Conn.	33	32	1	1	1	0	2	0	2
Barbour, M. L. & Sons..... Yarmouth, Me.	2	1	1						
Boston Market Gardeners Assoc.... Boston, Mass.	2	2	0						
Breck, Joseph, & Sons..... Boston, Mass.	49	49	0						
Burpee, W. Atlee, Co..... Philadelphia, Pa.	34	34	0						
Comstock, Ferre & Co..... Wethersfield, Conn.	59	59	0				1	0	
Cone, Arthur R., Inc..... Buffalo, N. Y.	11	11	0	54	46	8			
Craver-Dickinson Co..... Buffalo, N. Y.				1	1	0			
Crosman Seed Corp..... Rochester, N. Y.	14	14	0						
Culkeen, Thomas F..... Charlestown, Mass.							5	1	4
Culver & Co..... Salem, Oregon				1	1	0			
Delta Sales Co..... Philadelphia, Pa.				2	2	0			
Devine & Hamma Co..... Yellow Springs, Ohio				5	5	0	1	1	0
Dickinson, Albert, Co..... Chicago, Ill.				10	10	0			
Doughten Seed Co..... Jersey City N. J.				1	0	1			
Druid Hill Park Seed Co..... Baltimore, Md.							1	0	1
Eastern States Farmers' Exchange West Springfield, Mass.	37	37	0	19	19	0	1	0	1
Eberle, Frederick, W..... Albany, N. Y.	7	6	1						
Ferry-Morse Seed Co..... Detroit, Mich.	26	26	0						
Forbes, Alexander, Co..... Milburn, N. J.	10	10	0						
Fredonia Seed Co..... Fredonia, N. Y.	15	15	0						
Garden State Seed Co..... Irvington, N. J.				1	0	1	2	0	2

Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory—Continued

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Harris, Joseph, Co..... Rochester, N. Y.	35	35	0						
Hart, Charles C., Seed Co..... Wethersfield, Conn.	58	54	4	3	3	0			
Hawkins, Budd D..... Reading, Vermont	5	5	0				1	0	
Home Garden Products Co..... New York, N. Y.							1	1	0
Hyde Park Seed Co..... New York, N. Y.				1	0	1			
Independence Hall Seed Co..... Baltimore, Md.							3	0	3
Jenks-White Co..... Salem, Oregon				1	1	0			
Landreth, D. Seed Co..... Philadelphia, Pa.	16	16	0				2	1	1
Lee, Patten Co..... Jersey City, N. J.							3	2	1
Lyon, John D., Inc..... Cambridge, Mass.				8	6	2	29	14	15
Mandeville & King Co..... Rochester, N. Y.	9	9	0						
Michael Leonard Seed Co..... Chicago, Ill.	7	7	0						
Northern Seed Co..... Providence, R. I.							2	0	2
Northrup, King & Co..... Minneapolis, Minn.	20	20	0	1	0	1			
The Page Seed Co..... Greene, N. Y.	34	34	0	14	14	0	3	0	3
Pedigreed Seed Co..... Jersey City, N. J.				2	0	2	5	0	5
Pelletized Seed Co..... New York City, N. Y.	2	2	0						
Philadelphia Seed Co..... Philadelphia, Pa.				10	8	2	1	0	1
Rice, Jerome B. Seed Co..... Cambridge, N. Y.	14	14	0						
Rice, J. B. Jr., Inc..... Shushan, N. Y.	3	3	0						
Ross Bros. Co..... Worcester, Mass.	18	18	0						
Rowe, Charles G..... Philadelphia, Pa.	2	2	0						
Scarlett, Wm. G. & Sons Baltimore, Md.				59	49	10	3	1	2

Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory—Concluded.

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Scott, O. M. & Co..... Marysville, Ohio							1	1	
Seaboard Seed Co..... Philadelphia, Pa.				1	1	0	2	1	
Stanford Seed Co..... Buffalo, N. Y.				57	56	1	4	2	
Teweles, L., Seed Co..... Milwaukee, Wisc.				1	1	0	2	0	2
Tri-State Seed Co..... Philadelphia, Pa.	13	11	2						
Twin City Supply Co..... Everett, Mass.							1	0	
Vaghans Seed Co..... New York City, N. Y.	46	46	0	1	1	0	3	1	
Whitney Seed Co..... Buffalo, N. Y.				69	62	7	5	4	
Woodruff, F. H., & Sons..... Milford, Conn.	66	66	0	1	1	0	1	1	
Woodruff, S. D., & Sons..... Orange, Conn.	27	27	0	1	1	0			
Woodworth-Bradley Co..... Providence, R. I.							1	0	1
	679	669	10	326	290	36	86	31	55

Thirty-sixth Annual Report of Pullorum Disease Eradication in Massachusetts



*Mass. Avian Tuberc. Effec. & Status
(Jan. 30) 1957*

During the 1955-56 testing season a total of 353 chicken, turkey, and pheasant flocks was tested. Among 1,178,167 samples tested, 0.08 percent was found to be positive, which is a definite decrease over the percentage (0.12) positive in the previous season. Six flocks revealed infection, and at the close of the season all but two were classified as negative. Pullorum infection was not detected in any flocks that were negative the previous season. It is encouraging to note that 99.40 percent of all birds tested are in nonreacting flocks.

THIRTY-SIXTH ANNUAL REPORT OF PULLORUM DISEASE ERADICATION IN MASSACHUSETTS 1955-56

H. Van Roekel, Miriam K. Clarke,
C. F. Smyser, and G. H. Snoeyenbos

INTRODUCTION

Results for the 1955-56 testing season reveal that 353 flocks, representing 1,178,167 samples, were tested, slightly less than that of the previous season. The percentage (0.03) of positive tests was less than that (0.12) of the previous season. Pullorum reactors were detected in only six flocks, none of which were negative the previous season. This is the first season in the testing history that no "breaks" were detected among negative flocks. It is encouraging to note that fewer infected flocks were detected and that, of the total birds tested, 98.45 percent were found in 100 percent tested nonreacting flocks.

The laboratory appreciates the fine cooperation of the majority of flock owners in striving towards a common objective, the eradication of pullorum disease. It is hoped that all flock owners and other agencies will continue with earnest desire and concerted effort to eliminate the disease completely from Massachusetts flocks.

We also wish to express our appreciation for the splendid cooperation received from the Extension Service, Massachusetts Department of Agriculture, and other agencies.

SUMMARY OF SERVICE RENDERED

Flocks tested.....	353
Chicken.....	285
Turkey.....	44
Pheasant.....	24
Number of tests.....	1,178,167
Chickens:	
Routine.....	1,052,982
Experimental.....	91,383
Fowl other than chickens:	
Routine.....	33,802
Experimental.....	0
Owners receiving necropsy service.....	31
Necropsies of reacting birds.....	59
Fowl Typhoid Tests:	
Number of flocks.....	3
Number of tests.....	4,442
Number of positive tests.....	115

Table 1. Distribution of Tests and Reactors by Counties and by Breeds

Breeds	Barnstable	Berkshire	Bristol	Essex	Franklin	Hampden	Hampshire	Middlesex	Norfolk	Plymouth	Worcester	Totals	Percent Positive
Rhode Island Reds													
Total tests.....	7,804	511	86,722	23,225	9,073	10,409	7,287	40,428	45,942	27,381	48,547	307,329	0.25
Positive tests.....	0	0	373	0	0	0	0	393	0	0	0	766	
New Hampshires													
Total tests.....	25,060		14,258	32,663				17,748	4,601	10,497	246	105,063	0.05
Positive tests.....	0		0	51				0	0	0	0	51	
Barred Plymouth Rocks													
Total tests.....		4,393	32,000	11,071	7,780	1,374	1,914	46,205	24,163	39,067	41,054	209,021	0.00
Positive tests.....		0	0	0	0	10	0	0	0	0	0	0	
White Plymouth Rocks													
Total tests.....	11	5,296	20,441	86,321	6,782	9,354	29,510	75,127	9,606	82,877	36,873	362,198	0.003
Positive tests.....	0	0	0	0	0	0	0	12	0	0	0	12	
White Leghorns													
Total tests.....		20,413	2,886	6,240	2,269	1,572	7,668		19,057	2,712	3,435	66,252	0.00
Positive tests.....		0	0	0	0	0	0		0	0	0	0	
Miscellaneous													
Total tests.....	4,123	360	13,621	40,709	335	758	1,477	12,835	2,916	8,406	8,962	94,502	0.11
Positive tests.....	0	0	89	12	0	0	0	0	0	0	0	101	
Total Tests.....	36,998	30,973	169,928	200,229	26,239	23,467	47,856	192,343	106,285	170,940	139,107	1,144,365	
Positive tests													
Number.....	0	0	462	63	0	0	0	405	0	0	0	930	
Percent	0.00	0.00	0.27	0.03	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.08	

DISTRIBUTION OF TESTS AND REACTORS

A total of 1,144,365 chicken samples from 11 counties was tested, and the percentage of positive tests was 0.08. No reactors were detected in eight counties. Also, the Barred Plymouth Rocks and White Leghorns tested revealed no reactors. Essex, Middlesex, Plymouth, and Bristol Counties led in the number of samples tested.

The following breeds were tested: Bantam, Barred Plymouth Rock, Columbian, Cornish, Crosses, Delaware, New Hampshire, Rhode Island Red, White American, White Leghorn, White Plymouth Rock.

The White Plymouth Rock, Rhode Island Red, Barred Plymouth Rock, New Hampshire, and White Leghorn were the predominating breeds tested. Of the total samples tested, 31.65 percent were taken from White Plymouth Rock, 26.86 percent from Rhode Island Red, 18.27 percent from Barred Plymouth Rock, 9.18 percent from the New Hampshire, and the remainder from other breeds.

Of the 1,016,456 samples collected from females, 50,790 were from hens and 995,666 from pullets, with 0.37 and 0.07 percent reactors, respectively. Among the 97,909 samples collected from males, 0.03 percent were positive.

ANNUAL TESTING OF FLOCKS

Table 2 lists the results from flocks tested (1) for the first time, (2) intermittently, (3) for two consecutive years, and (4) for three or more consecutive years.

In the group tested for the first time, 165 reactors were detected in one flock that is being subjected to an intensive retesting program to eliminate the infection from the flock. An acute outbreak of the disease occurred in part of the flock after the birds were in production. Fewer flocks and birds were tested in this group than during the previous season. The average number of birds to a flock in this group was 1,191.

In the intermittent group only one reactor was detected. This was a Bantam on a farm where different breeds and fowl other than chickens were being reared. This flock was retested and no additional reactors were detected. The average number of birds to a flock was 2,772.

Table 2. Annual Testing Versus Single and Intermittent Testing

Classification	Flocks	Birds	Total Tests	Positive Tests		Negative Flocks		Positive Flocks	
				Number	Percent	100-Percent Tested	Partially Tested	100-Percent Tested	Partially Tested
Tested for the first time.....	14	16,673	21,216	165	0.78	10	3	1	—
Intermittent testing.....	17	47,124	47,195	1	0.002	17	—	—	—
Two consecutive years.....	25	74,625	83,598	242	0.29	24	1	—	—
Three or more consecutive years.	229	939,027	992,356	522	0.05	224	4	1	—
TOTALS.....	285	1,077,449	1,144,365	930	0.08	275	8	2	—

In the two-year group the reactors were identified in one flock. The infection in this flock was eliminated through retesting. The number of birds tested in this group was considerably greater than in the previous season. The average number of birds to a flock was 2,985.

In the group tested for three or more consecutive years, there were 229 flocks, representing 992,356 tests, of which 0.05 percent were positive. Only one flock was classified as positive at the end of the testing year. Two other flocks were infected but the infection was eliminated through retesting before the termination of the season. The average number of birds to a flock in this group was 4,101.

For all four groups, 285 flocks were tested, representing 1,077,449 birds and 1,144,365 samples, of which 0.08 percent were positive. The 275 flocks that were 100 percent tested and nonreacting contained 1,060,746 birds or 98.45 percent of the total birds tested. Two flocks were classified as positive. The percentage of reactors among these birds was 8.88.

During the past year, 57 or 18.33 percent of the flocks tested in 1954-55 were not tested. Annual testing of flocks is necessary to determine the pullorum status of flocks. If flock owners find it necessary to omit testing for a year or more, they should procure replacement stock from officially recognized pullorum-passed and pullorum-clean flocks. Adequate precautions should be taken against the introduction of infection.

APPEARANCE OF INFECTION IN FLOCKS PREVIOUSLY NEGATIVE

This is the first year in the history of testing that no "breaks" were observed in flocks that were negative the previous season. This is most encouraging, and it is hoped that this record may continue. In table 3 is given the incidence of "breaks" among Massachusetts tested flocks during the past 15 years.

Flock owners and hatcherymen should constantly observe strictest vigilance against the introduction and spread of the disease.

The following measures have been found to be effective in establishing and maintaining a pullorum-free flock:

1. All the birds on the premises should be tested each year.
2. If infection is present, the entire flock should be retested within four to six weeks until a negative report is obtained, provided the value of the birds justifies the expenditure.
3. Every reactor, regardless of its value, should be removed from the premises and sold for slaughter immediately upon receipt of the report.
4. Offal from all birds dressed for market or for home consumption as well as dead birds that are not fit for consumption should be burned.
5. The poultry houses, runs, and equipment should be thoroughly cleaned and disinfected immediately after removal of reactors. An empty pen to each house should be provided to facilitate cleaning and disinfection during the winter months. Disinfectants approved by the United States Department of Agriculture should be used.
6. Birds removed from the premises to egg-laying contests, exhibitions, etc., should be held in quarantine and determined free of disease before they are readmitted into the flock.

Table 3. The Incidence of "Breaks" Observed During the Past Fifteen Years

Year	Number of Flocks	Breaks		Flocks with Less than 0.5 Percent Infection on First Test	
		Number	Percent	Number	Percent
1942	255	6	2.35	3	50.00
1943	286	13	4.54	8	61.54
1944	289	17	5.88	13	76.47
1945	340	21	6.18	17	80.95
1946	388	20	5.15	14	70.00
1947	430	17	3.95	9	52.94
1948	425	16	3.76	13	81.25
1949	386	6	1.55	3	50.00
1950	383	18	4.70	16	88.88
1951	381	6	1.57	6	100.00
1952	360	8	2.22	5	62.50
1953	316	7	2.22	4	57.14
1954	291	2	0.69	2	100.00
1955	275	5	1.82	2	40.00
1956	0	0	0.00	0	0.00

7. Purchase of stock in the form of adults, chicks, and eggs should be from known pullorum disease-free flocks. The Massachusetts Department of Agriculture, 41 Tremont Street, Boston, should be consulted regarding additions or replacements in the flock.

8. Eggs should not be saved for hatching until after a flock has been tested and all the infected birds removed. Early pullet testing will permit early hatching.

9. Fresh and infertile eggs from unknown or infected sources should not be fed to chickens or exposed to birds or animals, such as crows, sparrows, and skunks, that may carry or spread the infection.

10. Poultrymen should not custom-hatch for untested or infected flocks (including fowl other than chickens).

11. Owners of pullorum disease-free flocks should not permit hatching where infected eggs or stock may be found.

12. Poultrymen should not buy feed in bags that have been used or exposed to infection. (Such bags if properly disinfected will be safe for further use.)

13. Poultrymen should regard fowl other than chickens as a possible source of pullorum infection unless tested and found free from pullorum disease.

14. Poultrymen should not use equipment that has been exposed to or contaminated with infective material unless it is properly cleaned and sterilized or disinfected.

TESTING OF FOWL OTHER THAN CHICKENS

During the past year 33,802 samples from fowl other than chickens, including 26,688 turkeys, 4,980 pheasants, 1,677 quail, 297 partridge, 144 geese, 9 guinea fowl, 4 pea fowl, and 3 ducks were tested. No reactors were detected.

NONREACTING AND POSITIVE FLOCKS CLASSIFIED BY COUNTIES

A total of 283 nonreacting flocks, representing 1,071,031 birds, was identified in 11 counties as listed in table 4. A total of 275 flocks was 100-percent tested whereas eight flocks were partially tested. The latter group constituted 10,285 birds located in six counties. Partial flock testing is not recommended to determine the true status of a flock. It is encouraging to note that 98.45 percent of all birds tested are in 100-percent nonreacting flocks, and it is hoped that in the near future all flocks will be 100-percent tested.

Only two flocks, representing 6,418 birds, were classified as positive in two counties at the close of the season. Both flocks are in the process of being retested.

During the coming testing season an effort will be made to further eradication of the infection either through partial or complete depopulation of the flock, and if that is not feasible, the infection will be eliminated through retesting. It is hoped that every known focus of infection can be eliminated without unnecessary delay.

Table 4. Nonreacting and Positive Flocks Classified by Counties

County	100-Percent Tested		Partially Tested		Totals	
	Flocks	Birds	Flocks	Birds	Flocks	Birds
Nonreacting Flocks						
Barnstable . . .	5	36,998	—	—	5	36,998
Berkshire . . .	7	30,724	1	249	8	30,973
Bristol	36	115,707	1	492	37	116,199
Essex	43	193,331	1	4,075	44	197,406
Franklin	11	26,239	—	—	11	26,239
Hampden	13	22,263	1	1,204	14	23,467
Hampshire . . .	18	47,856	—	—	18	47,856
Middlesex . . .	45	174,116	1	1,445	46	175,561
Norfolk	23	106,285	—	—	23	106,285
Plymouth . . .	37	168,120	3	2,820	40	170,940
Worcester . . .	37	139,107	—	—	37	139,107
Totals	275	1,060,746	8	10,285	283	1,071,031
Positive Flocks						
Bristol	1	2,469	—	—	1	2,469
Middlesex . . .	1	3,949	—	—	1	3,949
Totals	2	6,418	—	—	2	6,418

COMPARISON OF 1954-55 AND 1955-56 TESTING

In table 5 are listed the data for the two seasons. Fewer flocks, birds, and samples were tested this past season than in 1954-55. It is encouraging to note that the percentage of reactors was appreciably less than in 1954-55. Definite progress is being made in further eliminating the disease from Massachusetts flocks and in preventing clean flocks from becoming reinfected. Every poultryman, hatcheryman, or anyone associated with the industry should strive to attain the goal of completely eliminating this disease from Massachusetts flocks.

Table 5. Comparison of 1954-55 and 1955-56 Testing

County	Flocks	Birds	Tests	Positive Tests Percent	Non- reacting Flocks
1954-55 Season					
Barnstable.....	4	32,137	32,137	0.00	4
Berkshire.....	8	29,366	29,366	0.00	8
Bristol.....	45	129,761	138,785	0.65	42
Essex.....	42	169,802	180,311	0.02	42
Franklin...	12	25,164	25,164	0.00	12
Hampden.....	11	18,694	18,694	0.00	11
Hampshire...	15	39,981	39,981	0.00	15
Middlesex.....	58	209,772	245,482	0.18	56
Norfolk.....	27	130,401	130,401	0.00	27
Plymouth.....	50	173,222	175,178	0.00	50
Worcester...	39	143,243	154,323	0.06	39
Totals.....	311	1,101,543	1,169,822	0.13	306
1955-56 Season					
Barnstable.....	5	36,998	36,998	0.00	5
Berkshire.....	8	30,973	30,973	0.00	8
Bristol.....	38	118,668	169,928	0.27	37
Essex.....	44	197,406	200,229	0.03	44
Franklin.....	11	26,239	26,239	0.00	11
Hampden.....	14	23,467	23,467	0.00	14
Hampshire.....	18	47,856	47,856	0.00	18
Middlesex.....	47	179,510	192,343	0.21	46
Norfolk.....	23	106,285	106,285	0.00	23
Plymouth.....	40	170,940	170,940	0.00	40
Worcester.....	37	139,107	139,107	0.00	37
Totals.....	285	1,077,449	1,144,365	0.08	283

THIRTY-SIX-YEAR PULLORUM DISEASE TESTING SUMMARY

In table 6 is given a summary of testing results for thirty-six years of testing. The data in this table reveal that pullorum disease can be eliminated from flocks and that complete eradication should be possible to attain in the near future.

Table 6. Thirty-Six-Year Pullorum Disease Testing Summary

Season	Flocks	Birds	Total Tests	Positive Tests Percent	Non- reacting Flocks	Birds in Non- reacting Flocks	
						Number	Percent
1920-21.....	108	24,718	24,718	12.50	25	2,414	9.77
1921-22.....	110	29,875	29,875	12.65	27	4,032	13.50
1922-23.....	121	33,602	33,602	7.60	29	5,400	16.07
1923-24.....	139	59,635	59,635	6.53	38	11,082	18.58
1924-25.....	156	66,503	66,503	2.94	79	25,390	38.18
1925-26.....	201	67,919	67,919	2.31	124	33,615	49.49
1926-27.....	249	127,327	127,327	4.03	114	40,269	31.63
1927-28.....	321	190,658	232,091	5.35	138	80,829	42.39
1928-29.....	413	254,512	304,092	3.56	228	153,334	60.25
1929-30.....	460	331,314	386,098	2.17	309	203,038	66.97
1930-31.....	447	356,810	402,983	1.47	328	267,229	74.89
1931-32.....	455	377,191	420,861	0.90	355	298,534	79.15
1932-33.....	335	296,093	300,714	0.47	276	238,074	80.41
1933-34.....	262	263,241	284,848	0.53	229	212,782	80.83
1934-35.....	244	281,124	301,887	0.39	213	251,778	89.56
1935-36.....	252	329,659	344,081	0.30	230	315,215	95.95
1936-37.....	307	448,519	561,762	0.37	281	424,431	94.63
1937-38.....	308	480,227	497,769	0.17	286	457,466	95.26
1938-39.....	355	571,065	615,205	0.34	327	469,134	82.15
1939-40.....	346	573,000	673,222	0.51	332	497,356	86.80
1940-41.....	309	527,328	538,589	0.09	299	492,475	93.39
1941-42.....	366	653,080	662,715	0.27	350	591,628	90.59
1942-43.....	332	637,666	649,137	0.48	317	600,607	94.19
1943-44.....	413	762,066	791,596	0.11	386	721,229	94.64
1944-45.....	458	836,481	943,987	0.12	431	792,551	94.75
1945-46.....	538	1,125,737	1,225,594	0.12	513	1,085,726	96.45
1946-47.....	562	1,156,147	1,238,983	0.13	534	1,112,043	96.19
1947-48.....	494	1,219,957	1,272,547	0.10	476	1,185,852	97.20
1948-49.....	458	1,179,481	1,213,073	0.04	452	1,171,363	99.31
1949-50.....	475	1,360,865	1,444,364	0.06	465	1,344,860	98.82
1950-51.....	448	1,358,540	1,394,192	0.05	442	1,339,068	98.57
1951-52.....	417	1,343,955	1,370,430	0.016	412	1,324,195	98.53
1952-53.....	371	1,155,359	1,168,739	0.04	366	1,146,932	99.27
1953-54.....	338	1,178,090	1,195,159	0.004	335	1,170,936	99.39
1954-55.....	311	1,101,543	1,169,822	0.13	306	1,085,449	98.54
1955-56.....	285	1,077,449	1,144,365	0.08	283	1,071,031	99.40

COMMENTS AND SUGGESTIONS

Filing Applications for Testing: At the beginning of each season, flock owners who received testing service the previous season are sent application cards for the next year's work. Unfortunately flock owners frequently delay returning these cards, and in many instances do not return them at all but attempt to make

arrangements for testing by letter or telephone. The laboratory is not in a position to render efficient service when ample notification is not given when testing is desired. All flock owners have been notified that the laboratory will follow the policy of processing the applications in the order received. It should be emphasized that flock owners must recognize that the testing load has to be distributed over several months instead of two or three months because it is practically impossible to employ personnel for only a few months. Also all breeding flocks should be tested as soon as the birds are five months of age, if the laboratory is in a position to do so. The following summary gives the distribution of tests by months:

Months	Number of Tests	Months	Number of Tests
April, 1955	39,646	November, 1955	152,360
May	36,890	December	136,659
June	37,405	January, 1956	149,773
July	73,307	February	82,924
August	99,204	March	52,832
September	149,671	April	4,839
October	162,657		
		Total	1,178,167

Expansion in Efforts Toward Pullorum Disease Eradication: The testing data presented in this bulletin clearly reveal that pullorum disease is amenable to eradication from our poultry flocks. Commencing July 1, 1956 an experimental program for the complete eradication of the disease in Massachusetts will be undertaken. Every known focus of infection will be investigated and necessary steps will be taken to eliminate the same as quickly as possible. The general plan of the program will be built around the following recommendations which have been approved by the Massachusetts Federation of Poultry Associations.

- I. Handling of flocks with acute outbreaks:
 - A. Affected chicks should be destroyed or reared for broilers. If early liquidation is not possible, then infection should be eliminated through short interval retesting.
 - B. In adult flocks special precautionary measures should be instituted to prevent the disease from spreading within the flock or to other flocks.
 - 1. Flocks in the acute stage of the disease should not be sold.
 - 2. Affected pens should be isolated if possible.
 - 3. Medication should be given under the supervision of competent persons.
 - 4. After the disease has subsided the flock should either be sold or tested at short intervals.
 - C. The use of drugs in an acute outbreak should be exercised only upon recommendation by competent persons.

- II. Handling of infected tested breeding flocks:
 - A. Flock owners desiring official recognition are compelled to eradicate the disease from their flocks.

B. Infected breeding flocks whose owners do not wish to receive official recognition should be subjected to a planned eradication program.

III. Specific sanitary and control measures:

A. Upon identification of infection, effective plans should be applied regarding movement and sale of stock.

1. Infected semimature and mature flocks when sold should be slaughtered.

2. Reactors should be removed and sold for slaughter as soon as possible.

3. Immediately upon detection of infection in breeder and commercial hatcheries, effective plans should be instituted to prevent the further spread of the disease.

B. Sanitary conditions consistent with a sound eradication program should be maintained on all contaminated premises.

C. Only flocks that meet the qualifications of the pullorum-passed and pullorum-clean grades should be permitted to produce hatching eggs.

D. Purchase of pullorum-clean stock should be more widely advocated.

E. All birds entered in shows and contests should be free of pullorum disease as determined by the agglutination test.

F. Regulatory aid should be requested for flock owners refusing to cooperate on a voluntary basis.

G. The testing of infected flocks should be done on a free basis by an official state agent.

H. An extensive educational program should be a vital part of the eradication campaign.

Inspection of Commercial Feedstuffs

BY

Feed Control Service Staff

Massachusetts Agricultural Experiment Station

Jan. 22, 1957





INSPECTION OF COMMERCIAL FEEDSTUFFS

By Feed Control Service Staff

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INTRODUCTION

During the past year there has been considerable discussion among feed manufacturers and control officials about labeling, particularly the labeling of feeds containing drugs. It seems desirable to state the position of the Massachusetts Control Service on this subject.

The Massachusetts Feed Law, Section 225, provides that: "Each package, lot or parcel of commercial feeding stuff sold or offered, exposed or kept for sale or distributed shall have affixed thereto in a conspicuous place, as provided in the following section, a tag or label containing a legible and plainly printed statement in the English language clearly and truly certifying:

- (a) The weight of the contents of the package, lot or parcel
- (b) The name, brand or trade mark
- (c) The name and principal address of the manufacturer or person responsible for placing the commodity on the market
- (d) The minimum per cent of crude protein
- (e) The minimum per cent of crude fat
- (f) The maximum per cent of crude fiber
- (g) The specific name of each ingredient used in its manufacture.

"If such a tag or label contains any claim of one or more dietary factors other than those herein specified, such tag or label shall bear a legible and plainly printed statement in the English language guaranteeing such claim."

Section 230 further provides that: "The director or his authorized deputy may refuse to register any commercial feeding stuff under a name, brand, or trade-mark which, in his opinion, would be misleading or deceptive, or which would tend to mislead or deceive as to the materials of which the feeding stuff is composed."

These requirements allow considerable latitude in the form of labeling that may be used. The Control Service does not insist upon one rigidly set pattern. There are a number of ways of labeling feeds to give the farmer the information required by law and, in the case of feeds containing drugs, the additional information needed for the proper and safe use of these feeds.

The Control Service will furnish upon request copies of specimen labels recommended for various types of feed. However, it is not mandatory for feeds sold in Massachusetts to have labels that are exact copies of those recommended. Labels that differ in some respects but which also meet the requirements of the Massachusetts Feed Law will be accepted.

Brands Substantially Complying with Guarantees

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Acme-Evans Co., Inc.		Battle Creek Dog Food Co.	
Acme Wheat Standard Middlings with screenings.....	1	Miller's Dog Meal.....	1
L. P. Adams Co.		Miller's Kibbles Dog Food.....	1
Greylock Brand 16% Dairy Feed....	1	Beacon Milling Co., Inc.	
Greylock Brand Laying Mash.....	1	Auburn "16".....	1
Ajax Dog Food Co.		Beacon "32" for Mixing with Home Grains.....	1
Ajax Kibbled Biscuits.....	1	Beacon "16".....	1
Albers Milling Co.		Beacon Balancer Pellets.....	1
Albers Rabbit Family Ration.....	1	Beacon Beef Creep and Fitting Ration	1
Friskies Dog Food Meal.....	1	Beacon Breeder All-Mash.....	1
Allied Mills, Inc.		Beacon Breeders Mash.....	1
Wayne 20% Dairy.....	1	Beacon Broiler Finisher.....	1
Wayne Dog Food.....	1	Beacon Calf Grain.....	1
Wayne Egg Mash.....	1	Beacon Calf Starter.....	1
Wayne 26% Egg & Breeder.....	1	Beacon Complete Starter.....	1
Wayne Fitting Ration.....	1	Beacon Dairy Breeder Pellets.....	1
Wayne Pork Maker.....	1	Beacon Dairy Fitting.....	1
Wayne Test Cow Ration.....	1	Beacon "22" Egg Mash.....	1
Wayne Turkey Growing Mash.....	1	Beacon Goat Ration.....	1
Wayne Universal Egg.....	1	Beacon Grower All-Mash.....	2
Wayne Universal Grower.....	1	Beacon "18" Growing Mash.....	1
American Crystal Sugar Co.		Beacon Horse Feed.....	1
Plain Dried Beet Pulp.....	1	Beacon Market Egg All-Mash.....	1
American Maize-Products Co.		Beacon Puppy Starter.....	1
Amaizo Gluten Meal.....	1	Beacon Starter-Broiler.....	1
Animal Foundation, Inc.		Beacon "18" Test Cow Ration.....	1
Hunt Club Dog Meal.....	1	Beacon "16" Test Cow Ration.....	1
Arady Farme Milling Co.		Beacon "14" Test Cow Ration.....	1
Rockland Guinea Pig Diet.....	1	Beacon Turkey and Game Bird Breeder	1
Rockland Monkey Diet.....	1	Beacon Turkey Finisher All-Mash...	1
Rockland Rabbit Ration.....	1	Beacon Turkey & Game Bird Fitting..	1
Rockland Rat Diet Complete.....	1	Beacon Turkey & Game Bird Grower	1
Wonder Dog Food.....	1	Be-Co-Lass.....	1
Wonder Dog Food Kibbled.....	1	Best Dog Food Co.	
Wonderfat Station Feed.....	1	Vita-Best Kiblan Meal.....	1
Wonderfat Station Feed Pellets.....	1	Best Feeds & Farm Supplies, Inc.	
Archer-Daniels-Midland Co.		Joy Dog Food.....	1
Archer Quality 36% Protein Linseed Oil Meal.....	1	Blatchford Calf Meal Co.	
34% Protein Fat-Fortified Linseed Oil Meal.....	1	Blatchford's Calf Meal.....	1
Ashcraft-Wilkinson Co.		Blatchford's Calfadine.....	1
Cow-Eta Brand 41% Protein Cotton- seed Meal.....	1	Blatchford's Pablets.....	1
B & W Canning Co., Inc.		Borden Grain Co.	
B 'n W Brand Dried Citrus Pulp....	1	Borden's 14 Fitting.....	1
E. W. Bailey & Co., Inc.		Borden's Laying Mash.....	1
Pennant Chick Starter.....	1	Borden's Super Mash.....	2
Pennant Complete Egg Ration.....	1	Borden's Super Starter & Broiler Feed	1
Pennant Growing Mash.....	1	Borden's Sweet 16 Dairy.....	1
Pennant Laying Mash.....	1	George B. Brown Corp.	
Pennant Pig Feed.....	1	Brown's Complete Layer.....	1
Pennant Rabbit Pellets.....	1	Brown's Dairy Feed.....	1
Barber & Bennett, Inc.		Brown's Egg Mash.....	1
Fort Orange Dog Food.....	1	Brown's Fitting Ration.....	1
Fort Orange 12% Fitting and Calf Grain Ration.....	1	Brown's Pig Feed.....	1
Fort Orange 15% Test Ration.....	1	Buckeye Cotton Oil Co.	
		Buckeye 44% Protein Solvent Ex- tracted Soybean Oil Meal.....	1
		Cargill, Inc.	
		44% Protein Solvent Extracted Soy- bean Oil Meal.....	1
		Central Soya Co., Inc.	
		Central Star Brand Solvent Extracted Soybean Oil Meal.....	1

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Clyde Milling Corp.		Wirthmore Mink Food.....	1
Clyde Complete Rabbit Pellets.....	1	Wirthmore Meatless Mink.....	1
Clyde Dry and Freshening Ration ...	1	Wirthmore Pig and Sow Feed.....	1
Clyde Horse Feed.....	1	Wirthmore Poultry Fitting.....	1
Clyde Super Egg Mash.....	1	Wirthmore Poultry Flush.....	1
Clyde Test Cow 20.....	1	Wirthmore Rabbit Pellets.....	1
Clyde Test Cow 18.....	1	Wirthmore Sheep and Goat Ration...	1
Clyde Test Cow 16.....	1	Wirthmore Stock Feed.....	1
New England 20 Dairy Ration.....	1	Wirthmore Super Pellets.....	1
New England 16 Dairy Ration.....	1	Wirthmore Coarse Test Ration.....	1
Cocke & Co.		Wirthmore Turkey Fattening Ration..	1
Cocke-Sure Brand 41% Protein Cotton- seed Meal.....	1	Wirthmore Turkey Growing Ration..	1
Colby Cooperative Starch Co.		Wirthmore Turkey Starter Ration....	1
Co-Star Brand Dried Potato Pulp....	1	Wirthmore Twin-Mix Calf Ration....	1
Community Service, Inc.		Crawford Brothers, Inc.	
Community 18% Dairy Ration.....	1	Crawford 20% Dairy Ration.....	1
Community 16% Dairy Ration.....	1	Crawford 18% Dairy Ration.....	1
Community Fitting Ration.....	1	*Crawford 16% Hi-Energy Laying Mash	1
Community Growing Mash.....	1	Crawford Hi-Energy Starter & Broiler Mash.....	1
Community Laying Mash.....	1	Crawford Laying Mash.....	1
Consolidated Rendering Co.		Crawford 16% Milk Flow.....	1
Corenco 47% Meat & Bone Scrap....	1	Crawford Pig Grower-Fattener.....	1
Corn Products Refining Co.		Crawford Rabbit Pellets.....	1
Buffalo Brand 21% Protein Corn Gluten Feed.....	1	Crawford Super Egg Mash.....	1
Diamond Brand Corn Gluten Meal..	1	Dawnwood Farms	
Courcy & Sons Grain Co.		Dawnwood Farms Caf-Star.....	1
Courcy's Laying Mash.....	1	Dean & Lee	
Cover Grain & Feed Co.		Pathfinder Complete Growing.....	1
C & P Grade A Laying Mash.....	1	Pathfinder Complete Laying.....	1
C & P Growing Mash.....	1	Pilgrim Egg Producer.....	1
C & P Pig & Hog Feed.....	1	Pilgrim Growing Mash.....	1
Chas. M. Cox Co.		Pioneer Complete Rabbit Pellets.....	1
Wirthmore Breeder Mash.....	1	Decatur Milling Co., Inc.	
Wirthmore Calf Starter Meal.....	1	Homco Hominy Feed.....	1
Wirthmore Calving Ration.....	1	Delaware Mills, Inc.	
Wirthmore Challenger 18 Dairy Ration	1	Delaware Complete Starter and Grower	1
Wirthmore Challenger 16 Dairy Ration	1	Delaware Egg Mash.....	1
Wirthmore Challenger Coarse 16 Dairy Ration.....	2	Delaware Sweet 16% Dairy Feed....	1
Wirthmore Challenger Coarse 14 Dairy Ration.....	1	Delphos Grain & Soya Products Co.	
Wirthmore Complete Egg Ration....	1	44% Protein Soybean Oil Meal (Solvent Extracted).....	1
Wirthmore Complete Growing Ration	1	Frank Diauto	
Wirthmore 36% Dairy Mixing Ration	1	Diauto's Special Egg Mash.....	1
Wirthmore 32 Dairy Supplement.....	1	F. Diehl & Son, Inc.	
Wirthmore 20 Dairy Ration.....	1	Breeder.....	1
Wirthmore 14 Dairy Fitting Ration..	1	Fitting.....	1
Wirthmore 18 Dairy Record Ration....	2	Grower.....	1
Wirthmore 16 Dairy Record Ration....	2	Layer.....	1
Wirthmore Dog Food Meal.....	1	Dietrich & Gambrill, Inc.	
Wirthmore Dog Food Kibbled Biscuits	1	D & G all Mash Breeder Ration....	1
Wirthmore Fattening Pellets.....	1	D & G Breeder Mash.....	1
Wirthmore Fodder Greens.....	1	D & G Dry Cow-Fitting Ration....	1
Wirthmore Green Mountain 16 Dairy Ration.....	1	Frederick Laying Mash.....	1
Wirthmore Growing Mash.....	1	Gambrill's Growing Mash.....	1
Wirthmore Hi-Ener-G 16.....	1	Gambrill's Laying Mash.....	1
Wirthmore Hi-Ener-G Breeder.....	1	Dominion Malting (Ontario) Ltd.	
Wirthmore Hi-Ener-G Grower.....	1	Dried Brewer's Grains.....	1
Wirthmore Hi-Ener-G Layer.....	1	John C. Dow Co.	
Wirthmore Hi-Gro-Lay.....	1	Dow's Crumpled Meal.....	1
Wirthmore Hog Grower.....	1	Dow's Crunchy Dog Food.....	1
Wirthmore Horse Feed.....	1	Dow's Dog Biscuits.....	1
Wirthmore Laying Mash.....	1		

*See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Drackett Products Co.		S-X Breeder Mash	1
Drackett 44% Protein Soybean Oil		S-X 18% Dairy Ration	1
Meal Solvent Extracted	1	S-X 14% Fitting Ration	1
J. L. Dunnell & Son		S-X Grow-Egg Mash	1
Excel 18% Dairy Ration	1	S-X Starter and Broiler Connecticut	
Excel Fitting Ration	1	Formula	1
Excel Laying Mash	1	Farm Bureau Association	
Horse Feed	1	22% Breeder Mash	1
Starter and Grower—Horner's	1	Breeder Mash	1
Eastern States Farmers' Exchange, Inc.		Complete Breeder Mash	1
Calf Starter	1	Complete Developer Mash	1
Calving Ration	1	Complete Market Egg Mash	1
Cashmaker	1	Conditioner and Fleshing Mash	1
Champion	1	Dairy 20%	1
Class Leader	1	16% Dairy Ration	1
Dog Feed	1	16% Dairy Ration "Fine"	1
Fulpail	1	14% Dairy Ration "Fine"	1
Grasslander	1	Developer Mash	1
Lay-Mix	1	Fitting Ration	1
Matchmaker	1	High Energy Broiler and Starter Mash	1
Milkmere	1	Hog Feed	1
Milksaver	1	Market Egg Mash	1
Pig Primer	1	Maternity Ration	1
Pork Builder	1	14% Milking Ration	1
Porklets	1	Rabbit Food Pellets	1
Porkmix	1	Turkey Grower	1
Rabbettes	1	Farmers Feed Co.	
Suplets	1	Bull Brand Brewers Dried Grains	1
Supnix	1	Fishery Products, Inc.	
Sweepstakes	1	Monroe Brand Fish Meal	2
Turkey-Finisher	1	Florida Citrus Cannery Cooperative	
Turkey-Grower	1	Lake Wales Brand Citrus Pulp	1
Elmore Milling Co., Inc.		Flory Milling Co., Inc.	
Elmore Complete Market Egg Ration	1	Flory Fattener and Flesher (Finishing)	
Elmore Complete Rabbit Ration		Pellets	1
Pellets	1	Flory 20% Grower Mash	1
Elmore Complete Turkey Breeder		Flory Hi Broiler Mash	1
Ration	1	Flory Hi-Efficiency Grower Mash	1
Elmore Dry and Freshening Ration	1	Flory Hi-Efficiency Layer Mash	1
Elmore Egg Mash	1	Flory Hog Feed	1
Elmore Fitting Ration 14%	1	Flory Horse Feed	1
Elmore Growing Mash	1	Flory 22% Layer Mash	1
Elmore Horse Crunchies	1	Flory 20% Layer Mash	1
Elmore Horse Feed	1	Flory Rabbit Pellets	1
Elmore Milk Grains "Sixteen"	1	Flory Record 16% Dairy Feed	1
Elmore Pacemaker 18% Dairy Ration	1	Flory Record 14% Fitting Ration	1
Elmore Poultry and Turkey Fitting		Flory Superior 20% Dairy Feed	1
Ration	1	Flory Superior 16% Dairy Feed	1
Elmore Test Ration 18%	1	Flory Turkey and Poultry Fitting Feed	1
Elmore Test Ration 16%	1	Flory's Pure Wheat Middlings	1
Elmore Turkey Finisher (Fattener)	1	Fred A. Fountain	
Elmore Turkey Fitting Ration	1	Fountain's Breeder Mash	1
John W. Eshelman & Sons		Fountain's Complete Growing Pellets	1
Pennsy 16 Dairy Feed	1	Fountain's Growing Mash	1
Pennsy Laying Mash	1	Fountain's Laying Mash	1
Red Rose Breeder Mash	1	Nicholas Gangone	
Red Rose Complete Breeder Ration	1	Nick's Dog Food	1
Red Rose Complete Growing Ration	1	General Foods Corp., Corn Mill Div.	
Red Rose 18 Dairy Feed	1	Burt's Hominy Feed	1
Red Rose 16 Dairy Feed	1	General Foods Corp., Gaines Div.	
Red Rose Dog & Puppy Food	1	Gaines Dog Biscuits	1
Red Rose Fitting Ration	1	Gaines Kibbled Dog Biscuit	1
Red Rose Hog Meal	1	Gaines Homogenized Dog Meal	1
Red Rose Horse Feed	1	Gaines Krunchon Cubes	1
Red Rose Laying Pellets	1		
Red Rose Rabbit Pellets	1		
Red Rose Starter & Grower	1		
Essex County Co-operative Farming			
Assn.			
S-X All-Mash Breeder	1		
S-X All-Mash Grow-Egg	1		

Brands Substantially Complying with Guarantees (Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
General Mills, Inc.		Hales & Hunter Co.	
Washburn's Gold Medal Wheat Bran and Ground Wheat Screenings not exceeding Mill Run	1	Gold Flake Dairy 16	1
Washburn's Gold Medal Wheat Standard Middlings and Ground Wheat Screenings not exceeding Mill Run	1	Pioneer Bull Feed	1
General Mills, Inc., Feed Stores		Pioneer Calf Starter	1
Gold Medal Complete Layer Mash	1	Pioneer 32 Dairy	1
Gold Medal Complete Pig Feed	1	Pioneer Pelleted Flaked 18 Dairy	1
Gold Medal 32% Dairy Concentrate	1	Pioneer 16 Dairy	1
Gold Medal Green Rabbit Pellets	1	Pioneer Pelleted Flaked 15 Dairy	1
Gold Medal Grower Mash	1	Pioneer Dry & Freshening	1
Gold Medal Hi-Efficiency All Mash	1	Red Comb All Mash Grower	1
Gold Medal Hi-Efficiency Broiler Mash	1	Red Comb All Mash Layer	1
Gold Medal Hi-Efficiency Grower Mash	1	Red Comb All Mash Turkey Breeder	2
Gold Medal Hi-Efficiency Layer Mash	1	Red Comb Broiler Finisher	1
Gold Medal Hog Grower and Fattener	1	Red Comb C Flakes	1
Gold Medal Layer Mash	1	Red Comb Egg Mash	1
Gold Medal 20% Milk Ration	1	Red Comb Turkey Finisher Pellets	1
Gold Medal Stock Feed	1	Red Comb Turkey Grower	1
Gold Medal 20% Super Dairy Feed	1	Red Comb Turkey Starter	2
Gold Medal 16% Super Dairy Feed	1	Dwight Hamlin Co.	
Gold Medal 14% Super Fitting Ration	1	Hamlin's Dried Brewers Grains	1
Gold Medal Sweet Feed	1	D. Harbeck & Sons	
Vigor Dog Food	1	Welcome Egg Mash	1
General Mills, Inc., Larowe Region		Welcome Growing Mash	1
Larro Surechamp	1	Welcome Starter and Broiler Mash	1
Larro Surelay Complete "H-E"	1	Harper Feed Mills, Inc.	
Larro Surelay "H-E"	2	Green Pasture Dairy Fitting Ration	1
Larro Suremash 38	1	Harco Calf Starter and Grower	1
Larro Suremilk 32	1	Harco 20% Dairy Ration	1
Larro Suremilk 20	1	Harco 16% Dairy Ration	1
Larro Suremilk 16	1	Harco Dog Food	1
Larro Suremilk 14	1	Harco Dairy Fitting Ration	1
Larro Surepig	1	Harco Fattening Mash Station Feed	1
Larro Surepork 35	1	Harco Growing Mash	1
Larro Surepork Complete	1	Harco Hi-Energy Complete Growing Ration	1
Larro Surerabbit	1	Harco Hi-Energy Complete Laying Ration	1
Larro Sureturk	1	Harco Horse Feed	1
Gloucester By-Products, Inc.		Harco Laying Mash	1
Globpro Brand Fish Meal	1	Harco Rabbit Feed	1
Gorton-Pew Fisheries Co., Ltd.		Top Profit Hog Meal	1
Gorton's Redfish Meal	1	Hartz Mountain Products Corp.	
D. H. Grandin Milling Co.		Dog Yummies	1
Grandin's Bull Feed	1	Hi-Life Packing Co.	
Grandin's Calf Starter	1	Daily Bone Biscuit Dog Food	1
Grandin's Complete Growing Mash	1	Daily Dog Food Kibbled Biscuit	1
Grandin's 14 Fitting Ration	1	H. P. Hood & Sons, Inc.	
Grandin's Happy Calf Milk Replacer	1	Hood Calf Starter	1
Grandin's Hi-Nutro Mash	1	E. C. & W. L. Hopkins, Inc.	
Grandin's Horse Feed	1	Granite State Complete Mash	1
Grandin's Pig and Sow Feed	1	Granite State Dog Food	1
Grandin's Pork Maker	1	Granite State High-Energy Complete Breeder Mash	1
Grandin's Succulent Feed	1	Granite State Stock Feed	1
Grandin's Super Starter and Broiler Ration	1	J. William Horsey Corp.	
Grandin's 18 Test Ration	1	J. William Horsey Brand Dried Citrus Pulp	1
Grandin's 16 Test Ration	1	J. F. Imbs Milling Co.	
Grandin's Twin Six Dairy Feed	1	Charm Pure Winter Wheat Bran	1
Great Atlantic & Pacific Tea Co.		Independent Tallow Co.	
Daily Dog Pellets	1	Eggaday Brand 47% Protein Meat and Bone Scrap	1
Daily-Egg Laying Mash	1		
Great Star Flour Mills, Ltd.			
Wheat Bran	1		
Wheat Shorts	1		

Brands Substantially Complying with Guarantees —(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
International Milling Co.		Money's Worth High Efficiency Com-	
Blackhawk Wheat Bran with Ground		plete Mash.....	1
Mixed Screenings not exceeding 8%	1	Money's Worth High Efficiency Starter	1
Blackhawk Wheat Germ Meal.....	1	Money's Worth Laying Mash.....	1
Blackhawk Wheat Standard Middlings		Money's Worth Pig and Hog Feed...	1
with Ground Mixed Screenings not		Money's Worth Rabbit Pellets.....	1
exceeding mill run.....	1	Money's Worth Starter.....	1
Target Wheat Red Dog.....	1	Money's Worth Turkey Starter.....	1
Jaquith & Co., Inc.		Marianna Sales Co.	
Jaquith 16% Complete Layer Mash..	1	White Mule Brand 41% Protein Cotton-	
Jaquith 20% Dairy Ration.....	1	seed Meal.....	1
Jaquith Growing Mash.....	1	Maritime Milling Co., Inc.	
Jaquith High Efficiency Laying Mash	1	B-B Ma-Co Complete Breeder Ration	1
Jaquith Horse Feed.....	1	Marvin Grain Co.	
Jaquith Laying Mash.....	1	Marvin Dog Meal.....	1
Kasco Mills		Merrimack Farmers' Exchange, Inc.	
Kasco Complete Dog Ration.....	1	Merrimack Hominy Feed.....	1
Kasco Dog Pellets.....	1	Merrimack All Mash.....	1
Kellogg Co.		Merrimack 16% (Fine) Dairy Ration	2
Gro-Pup Ribbon Dog Food.....	1	Merrimack 14% Fitting Ration.....	2
Gro-Pup T-Bone Dog Biscuit.....	1	Merrimack Hi-F Layer.....	1
Kellogg's Hominy Feed.....	1	Merrimack Laying Mash.....	1
Spencer Kellogg & Sons, Inc.		Methuen Grain Co.	
Spencer Kellogg's 34% Protein Old		Umpire All-Mash Layer & Breeder...	1
Process (Expeller) Linseed Oil Meal	1	Minute Maid Corp.	
Kennel Food Supply Co., Inc.		Golden Isle Citrus Pulp.....	1
KFS Cero-Meato Brand Dog Food...	1	Geo. Q. Moon & Co., Inc.	
H. C. Knoke & Co.		Moon Complete Laying Mash.....	1
Barley Feed.....	1	Moon 20% Dairy Ration.....	1
Kronick's Coal & Grain Co.		Moon 16% Dairy Ration.....	1
Kronick's Egg Mash.....	1	Moon Dairy Fitting Ration.....	1
Kronick's Starter-Grower Mash.....	1	Moon Dog Food.....	1
Kuder Pulp Sales Co.		Moon Horse Feed.....	1
Kuder Dried Citrus Pulp High Sugar		Moon N. E. Complete Growing Mash	1
Late Production.....	1	Moon N. E. Complete Laying Mash	1
Lauhoff Grain Co.		Moon Rabbit Pellets.....	1
Vermilion Hominy Feed.....	1	Moon Super Growing Mash.....	1
Lauhoff Soya Co.		Moon Super Laying Mash.....	1
44% Protein Solvent Extracted Soy-		Moon 18% Test Ration.....	1
bean Oil Meal.....	2	Moon 16% Test Ration.....	1
Libby, McNeill & Libby		Moon Turkey Fitting Ration.....	1
Headliner Brand Dried Citrus Pulp...	1	Moon Turkey Starter Mash.....	1
Libner Grain Co., Inc.		Mowat, Wilson & Co.	
Libner's Dog Food.....	1	Dried Beet Pulp.....	1
McMillen Feed Mills		Nappanee Milling Co., Inc.	
Master Mix All Mash Layer.....	1	Hominy Feed.....	1
Master Mix All Mash Pullet Grower.	1	National Biscuit Co.	
Master Mix Breeder Concentrate....	1	Namico.....	1
Master Mix Chick Concentrate.....	1	Wheat Germ Meal.....	1
Master Mix Complete Rabbit Pellets.	1	Pal Tiny Bits.....	1
Master Mix 20% Dairy Feed.....	1	National Distillers Products Corp.	
Master Mix 16% Dairy Feed.....	1	Produlac Special Process Corn Distillers	
Master Mix Egg Mash.....	1	Dried Grains with Solubles.....	1
Master Mix Egg-lac Pellets.....	1	New Century Co.	
Master Mix Fitting Feed.....	1	Century Brewers Dried Grains.....	1
Master Mix Horse Feed.....	1	Northern Ohio Sugar Co.	
Master Mix Pig-Ets.....	1	GW Dried Beet Pulp.....	2
Mansfield Milling Co.		Ogden Grain Co.	
Full Cry Dog Meal.....	1	Ogden "Biddy" Mash.....	1
Money's Worth Complete Mash.....	1	Ogden Complete Layer.....	1
Money's Worth Dairy Feed 20%.....	1	Ogden Complete Starter Grower Layer	
Money's Worth Dairy Feed 16%.....	1	Breeder.....	1
Money's Worth Growing Mash.....	1	Ogden 16% Dairy Feed.....	1
Money's Worth High Efficiency Com-		Ogden Fitting Ration.....	1
plete Growing.....	1	Ogden Hi-Energy Breeder Mash.....	1
		Ogden Hi-Energy Growing Mash.....	1

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Ogden Grain Co.—Continued		Pillsbury's Wheat Germ Meal.....	1
Ogden Horse Feed.....	1	Pillsbury's Wheat Standard Middlings with Ground Wheat Screenings not exceeding mill run.....	1
Ogden Laying Mash.....	1	R. C. Pratt & Co., Ltd.	
Ogden Rabbit Pellets.....	1	Ruler Brand Pure Wheat Shorts.....	1
Ogden 14% S-M-R Ration.....	1	Quaker Oats Co.	
Ogden Super Pig Ration.....	1	Bell Cow Wheat Bran.....	1
Ogden Turkey Breeder.....	1	Ful-O-Pep Egg Breeder Ration.....	2
Ogilvie Flour Mills Co., Ltd.		Ful-O-Pep Fitting Feed.....	1
Ogilvie Wheat Bran.....	1	Ful-O-Pep Growing Mash.....	2
Old Trusty Dog Food Co.		Ful-O-Pep Laying Mash.....	2
Old Trusty Kibbled Dog Food.....	1	Ful-O-Pep Milking Feed.....	1
Palm Grain Co.		Ful-O-Pep Rabbit Ration.....	1
Palm's Complete Mash.....	1	Ful-O-Pep Super Greens.....	2
Park & Pollard Co., Inc.		Ful-O-Pep Test Cow Feed.....	2
Hi-Prime Complete Turkey Grower...	1	Ken-L-Biskit.....	1
Hi-Prime Turkey Finisher.....	1	Ken-L-Meal.....	1
Hi-Prime Turkey (Grower).....	1	Ken-L-Treats.....	1
Lay or Bust All Mash Breeder.....	1	Quaker Sugared Schumacher Feed....	3
Lay or Bust All Mash Grower.....	1	Ralston Purina Co.	
Lay or Bust All Mash Layer.....	1	Purina Breeder Layena (Complete Ration) E.....	1
Lay or Bust Egg Mash.....	1	Purina Bulky Las.....	1
Lay or Bust Fleshing Pellets.....	1	Purina Calf Startena E.....	1
Lay or Bust Hi-Power Broiler Ration...	1	Purina Chick Growena E.....	1
Lay or Bust Hi-Valu Pellets.....	1	Purina Cow Chow Concentrate.....	1
Milk Maid Bulky Sweet Dairy.....	1	Purina Cow Chow 16%.....	2
Milk Maid Calf Starter.....	1	Purina Cow Chow 14%.....	1
Milk Maid 20% Dairy Ration.....	1	Purina D & F Chow E.....	1
Milk Maid 16% Dairy Ration.....	1	Purina Dairy Chow 18.....	2
Milk Maid Dri-Fresh Ration.....	1	Purina Dairy Chow 16.....	1
Milk Maid Fitting Ration.....	1	Purina Dog Chow Checkers.....	1
Milk Maid 18% Test Ration.....	1	Purina Dog Chow Kibbled Meal.....	1
Munchy Dog Food.....	1	Purina Flock Chow E.....	1
Park & Pollard Complete Grower.....	1	Purina Fox Chow.....	1
Park & Pollard Complete Layer.....	1	Purina Game Bird Breeder Layena...	1
Park & Pollard Fitting Ration.....	1	Purina Game Bird Growena E.....	1
Park & Pollard Go-Tu-It Pig Grower...	1	Purina Goat Chow E.....	1
Park & Pollard Growing Feed.....	2	Purina Growena Developer E.....	1
Park & Pollard Power Pakt Horse Feed	1	Purina Hog Fatena E.....	1
Park & Pollard Rabbit Pellets.....	1	Purina Layena (Complete Ration) E	1
Park & Pollard Stock Feed.....	1	Purina Milk Chow E 16%.....	1
Red Ribbon 20% Dairy Ration.....	1	Purina Mink Chow.....	1
Red Ribbon 16% Dairy Ration.....	1	Purina Omolene.....	1
Yankee Horse Feed.....	1	Purina Poultry Booster Chow E....	1
George H. Parker Grain Co.		Purina Rabbit Chow Checkers(Com- plete Ration) E.....	1
Bill McHugh's Horse Feed.....	1	Purina Turkey Fatena.....	1
Parker's High A 14% Fitting Ration (Coarse).....	1	Purina Turkey Growena.....	1
Parker's Laying-Breeding Mash.....	1	John Reardon & Sons	
Parrish & Heimbecker, Ltd.		Register Brand Fish Meal.....	1
"Parrheim" Pure Wheat Bran.....	1	Register Brand 45% Protein Meat and Bone Scrap.....	1
Pasco Packing Co.		Redbird Farm, Inc.	
Sugar-Sweet Citrus Pulp.....	1	Redbird Super Broiler Mash.....	1
Patent Cereals Co.		H. F. Rieser's Sons, Inc.	
Hominy Feed.....	1	Rieser's Dividend All Mash Breeder..	1
Penick & Ford Ltd., Inc.		Rieser's Dividend All Mash Layer....	1
Douglas Corn Gluten Meal.....	1	Rieser's Dividend 18% Dairy Feed....	2
Phenix Foods Co., Division of Kraft Foods Co.		*Rieser's Dry & Fitting Ration.....	1
Kraco Dried Whole Whey.....	1	Rieser's Dividend 20% Egg Breeder Mash.....	1
Pillsbury Mills, Inc.		Rieser's Hi-Vite 18% Dairy Feed....	1
Pillsbury's XX Daisy.....	1	D. F. Riley	
Pillsbury's Wheat Bran with Ground Wheat Screenings not exceeding 8% Pillsbury's Hard Wheat Bran with Ground Wheat Screenings not ex- ceeding mill run.....	1	Riley's 16% Dairy Ration.....	1
		Riley's 14% Fitting Ration.....	1
		Riley's 18% Laying Mash.....	1

*See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees (Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Russell-Miller Milling Co.		Ventura Grain Co.	
Hard Wheat Occident Bran.....	1	Every-Day Complete Grower & Layer Mash.....	2
Hard Wheat Occident Standard Middlings.....	1	Every-Day 16% Dairy.....	2
Hard Wheat Occident Mixed Feed....	1	Every-Day 16% Dairy Pelleted.....	2
Ryther & Warren Co.		Every-Day Fitting Ration.....	2
Blue Tag Dairy Ration.....	1	Every-Day High Efficiency All-Mash Layer.....	1
Schenley Distillers, Inc.		Every-Day Layer-Breeder Mash.....	2
Schenley's Soludri.....	1	Ventura's 16%.....	2
Joseph E. Seagram & Sons, Inc.		Vitality Mills, Inc.	
Seagram's Corn Distillers Dried Grains	1	Vitality Body Builder Dog Food.....	1
Sherwin-Williams Co.		Vitality Instant Mix Dog Food.....	1
34% Linseed Oil Meal Blend of Ex- peller and Solvent Extracted Meals	1	Vitality Kibbled Biscuits.....	1
B. T. Smith Concentrates, Inc.		C. P. Washburn Co.	
B. T. Smith Brand Dried Citrus Pulp	1	Made Right Breeder.....	1
A. E. Staley Manufacturing Co.		Made Right Complete Breeder.....	1
Staley's 21% Corn Gluten Feed.....	1	Made Right Complete Broiler.....	1
Staley's Corn Gluten Meal.....	1	Made Right Complete Growing Feed.....	1
Sturdy Dog Food Co.		Made Right Complete Layer.....	1
Sturdy Dog Food Granular Meal.....	1	Made Right 20% Dairy.....	1
Sunshine Biscuits, Inc.		Made Right 16% Dairy.....	1
Austin's Dog Food.....	1	Made Right Fitting Ration.....	1
Swansea Grain Co.		Made Right Growing Feed.....	1
Swansea Quality All Mash Grower....	1	Made Right High Energy Breeder Mash.....	1
Swansea Quality All Mash Layer.....	2	Made Right High Energy Broiler.....	1
Swansea Quality Growing Mash.....	2	Made Right High Energy Grower Mash.....	1
Swansea Quality Laying Mash.....	2	Made Right High Energy Layer Mash.....	1
Swift & Co.		Made Right Horse Feed.....	1
Pard, Swift's Dog Meal.....	1	Made Right Laying Mash.....	1
Taft Bros.		Made Right Pig Feed.....	1
Taft Dairy Feed.....	1	Made Right Stock Feed.....	1
Taft H-E Laying Mash.....	1	H. K. Webster Co.	
United Co-Operative Farmers, Inc.		Blue Seal All-Mash Egg Ration.....	1
UCF All Mash Breeder.....	1	Blue Seal All-Mash Growing Ration...	1
UCF All Mash Grower & Layer.....	1	Blue Seal Breeder's Mash.....	1
UCF Breeder.....	1	Blue Seal Calf Starter.....	1
UCF Broiler Mash.....	1	Blue Seal Fine "20".....	1
UCF Calf Meal.....	1	Blue Seal "20" Dairy Ration, Coarse...	1
UCF Calf Starter.....	1	Blue Seal "16" Dairy Ration, Coarse...	1
UCF Calving Ration.....	1	Blue Seal Fine "16".....	1
UCF 16% Dairy.....	1	Blue Seal Economizer "16" Dairy Ration.....	1
UCF Dog Food.....	1	Blue Seal Egg Mash.....	1
UCF Egg Mash.....	1	Blue Seal Fattening Pellets.....	1
UCF Fitting Ration.....	1	Blue Seal Fitting Ration.....	1
UCF Grower.....	1	Blue Seal Goat Feed.....	1
UCF Horse Feed.....	1	Blue Seal Growing Mash.....	1
UCF Layer.....	1	Blue Seal Horse Feed.....	1
UCF Milkmaker.....	1	Blue Seal Pig Feed.....	1
UCF Mix Feed.....	1	Blue Seal Rabbit Pellets.....	1
UCF Stock Feed.....	1	Blue Seal Standard "16" Dairy Ration	1
UCF 16% Super Dairy.....	1	Blue Seal Succulent Feed and Calving Ration.....	1
UCF Super Starter.....	1	Blue Seal Super All-Mash Growing Ration.....	1
UCF Turkey Grower & Fattener.....	1	Blue Seal Super Mash.....	1
Unity Feeds, Inc.		Blue Seal Test Ration.....	1
Unity Breeder Mash.....	1	Blue Seal Turkey Breeder's Mash.....	1
Unity Complete Market Egg Mash....	1	Blue Seal Turkey Growing.....	1
Unity Complete Rabbit Pellets.....	1	Wirthmore Grain Co.	
Unity 20% Dairy Ration.....	1	Preferred Complete Growing Mash....	1
Unity 16% Dairy Ration.....	4	Preferred Complete Laying Ration....	1
Unity Dairy and Fitting Ration.....	1	Preferred Growing Mash.....	1
Unity Growing Mash.....	1	Preferred High Energy Grower.....	1
Unity High Energy Breeder Mash.....	1	Preferred High Energy Layer.....	1
Unity High Energy Growing Mash....	1	Wood's Stock Feed.....	1
Unity High Energy Laying Mash.....	1		
Unity Laying Mash.....	1		
Unity Pig & Hog Ration.....	1		
Unity Turkey & Game Bird Growing Mash.....	1		

Brands Not Conforming to Guarantees

This table includes brands that are one percent or more under guarantee in protein or fat or are one and one-half percent or more over guarantee in fiber.

Manufacturer and Brand	Protein		Fat		Fiber		Ash
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	
E. R. Bacon Grain Co. Bacon's Corn Gluten Feed.	20.2	23	—	—	—	—	—
Barnett & Co., Ltd. Dried Brewers Grains	23.9	22	5.8	7	—	—	—
Battle Creek Dog Food Co. Miller's Vitalized Dog Cookies	15.4	17	—	—	—	—	—
Brown-Forman Distillers Corp. BF Corn Distillers Dried Grains.	26.3	23	5.6	7	—	—	—
Crawford Brothers, Inc. Crawford 16% Hi-Energy Growing Mash	14.9	16	4.9	4	3.8	4	—
Crawford 16% Hi-Energy Growing Mash	18.5	16	4.2	4	5.6	4	—
*Crawford 16% Hi-Energy Laying Mash..	15.0	16	5.7	4	3.8	4	—
Farm Bureau Association Calf Grower	16.2	18	4.2	3.5	—	—	—
Horse Feed.....	10.8	12	—	—	—	—	—
Flory Milling Co., Inc. Flory 28% Turkey Starter Mash..	26.5	28	2.8	4	4.4	6	—
D. Harbeck & Sons Welcome Dairy Feed.....	21.8	20	2.6	4	—	—	—
International Stock Feed Corp. Grow-Em Milk Replacer.....	26.0	25	4.0	5	4.9	5	—
Jaquith & Co., Inc. Jaquith 20% Laying Mash.....	21.0	20	2.7	4	—	—	—
Kronick's Coal & Grain Co. Kronick's 16 Dairy Ration..	14.9	16	4.5	4	—	—	—
Mansfield Milling Co. Money's Worth Fitting Ration....	14.0	14	2.6	4.5	—	—	—
Money's Worth Turkey Growing....	17.8	20	3.6	3.5	4.4	6.5	—
Geo. O. Moon & Co., Inc. Moon 32% Supplement Ration.....	30.8	32	—	—	—	—	—
Ogden Grain Co. Ogden Broiler Finisher Feed, Arsanilic Acid .01%.....	20.0	18.5	3.7	5	—	—	—
Ogden Hi-Energy Starter & Broiler Nicarbazin .0125%.....	20.5	22	—	—	3.8	4	—
Park & Pollard Co., Inc. Milk Maid Goat Feed.....	13.8	16	—	—	—	—	—
Milk Maid Goat Feed.....	13.1	16	—	—	—	—	—
Park & Pollard Laying Mash.....	18.5	20	—	—	6.4	7	—
Ralston Purina Co. B & M Cow Chow.....	14.7	16	2.9	3.5	—	—	—
Purina Cow Chow 18%.....	18.4	18	1.9	3	—	—	—
H. F. Rieser's Sons, Inc. *Rieser's Dividend Dry & Fitting Ration	12.7	12	2.1	3.5	11.8	12	—
Rieser's Dividend Growing Mash.....	18.3	20	3.3	3	9.3	9	—
Rieser's Hi-Vite All Mash Grower....	14.8	16	—	—	10.6	6.5	—
Rieser's Hi-Vite Dry & Fitting Ration.	13.9	13	—	—	11.7	8.5	—
Rieser's Hi-Vite Growing Mash.....	17.3	20	3.4	3.5	11.0	7.0	—
Rieser's Hi-Vite Hi-Energy All Mash Breeder.....	15.8	17	—	—	10.3	6.0	—
Suni-Citrus Products Co. Sweet Suni-Citrus Pulp.....	6.7	6	2.8	5	—	—	—
Ventura Grain Co. Every-Day 20% Dairy.....	18.7	20	2.5	4	6.4	7	—
Every-Day 20% Dairy.....	18.8	20	3.6	4	—	—	—
Wirthmore Grain Co. Bliss Dairy Ration.....	17.4	20	2.7	4	—	—	—
Preferred Laying Mash.....	18.8	20	—	—	—	—	—

*See also table of "Brands Substantially Complying with Guarantees."

Feeds Containing Drugs

Manufacturer and Brand	Drug	Found (%)	Guaranteed (%)
Allied Mills, Inc.			
Wayne Broiler Finisher	3-Nitro ¹	.005	.005
	Nicarbazine ²	.013	.0125
Wayne Chick Starter	3-Nitro	.0035	.0025
	Nicarbazine	1	.0125
Wayne Rocket Broiler Feed	3-Nitro	.005	.005
	Nicarbazine	.010	.0125
Wayne Universal Grower	Nicarbazine	.013	.0125
Wayne Universal Turkey Grower	4-Nitro ⁴	.023	.025
Beacon Milling Co., Inc.			
Beacon Broiler Finisher	Nicarbazine	.0125	.0125
Beacon Broiler Finisher	Nicarbazine	.0122	.0125
	Arsanilic Acid	.011	.009
Beacon C-C Pellets	Sulphur	4.4	5
Beacon Chlortetracycline and Furazolidone Mix	Chlortetracycline ⁵	.08 g/lb	.05 g/lb
	Furazolidone	.009	.011
Beacon Complete Starter	Nicarbazine	.0141	.0125
Beacon Special Worm Mash	Nicotine ³	1	.07
	Phenothiazine	.34	.5
	Chlortetracycline	.07 g/lb	.045 g/lb
Beacon Starter-Broiler	Nicarbazine	.014	.0125
	Arsanilic Acid	.013	.009
Beacon Starter-Broiler	Nicarbazine	.0138	.0125
	Arsanilic Acid	.011	.009
Beacon Sulfaquinoxaline Control Mash Base	Sulfaquinoxaline	.104	.1
Beacon Turkey Grower All-Mash	2 Acetylaminio-5-Nitrothiazole	.045	.05
Beacon Turkey Grower All-Mash	4-Nitro	.026	.025
Beacon Turkey Starter	Sulfaquinoxaline	.023	.0175
Chas. M. Cox Co.			
Wirthmore Complete Chick Starter	Sulfaquinoxaline	.019	.0175
Wirthmore Complete Chick Starter	Sulfaquinoxaline	.020	.0175
Wirthmore Complete Growing Ration	Sulfaquinoxaline	.014	.0125
Wirthmore Hi-Ener-G Grower	Sulfaquinoxaline	.0125	.0125
Wirthmore Improved Hi-Ener-G Starter and Broiler Ration	Chlortetracycline	.2 g/lb	.1 g/lb
	Nicarbazine	.0145	.0125
Wirthmore Improved Hi-Ener-G Starter and Broiler Ration	Chlortetracycline	.2 g/lb	.1 g/lb
	Nicarbazine	.0145	.0125
Wirthmore Improved Hi-Ener-G Starter and Broiler Ration	Nicarbazine	.011	.0125
	Sodium Arsanilate	.010	.0088
Wirthmore Improved Hi-Ener-G Starter and Broiler Ration	Nicarbazine	.013	.0125
	Sodium Arsanilate	.010	.0088
Wirthmore Improved Hi-Ener-G Starter and Broiler Ration	Nicarbazine	.012	.0125
	Sodium Arsanilate	.011	.0088
Wirthmore Improved Hi-Ener-G Starter and Broiler Ration	Nicarbazine	.014	.0125
	Sodium Arsanilate	.014	.0088
Wirthmore PN Mixture	Phenothiazine	.3	.45
	Nicotine ³	1	.045
Wirthmore Poultry Mash Base	Sulfaquinoxaline	.098	.1
Wirthmore Quickies	Chlortetracycline	.085 g/lb	.1 g/lb
Crawford Brothers, Inc.			
Crawford Complete Chick Starter	Nicarbazine	.003 ⁶	.0125
Crawford Hi-Energy Growing Mash ⁷	Nicarbazine	.010	.0125
Crouse Chinchilla Farm			
Better Fare for Chinchillas	Sulfaquinoxaline	.012	.0125
Dean & Lee			
Pathfinder Starter-Broiler	Nitrofurazone	.0058	.0055
Dietrich & Gambrill, Inc.			
D & G Fix-etts	Chlortetracycline	.075 g/lb	.05 g/lb
Gambrill's Chick Starter	Nicarbazine	.0125	.0125

¹ 3-Nitro-4-Hydroxyphenylarsonic Acid.² Nicarbazine (4, 4'-Dinitrocarbanilide 2-Hydroxy-4, 6-dimethylpyrimidine)³ Not determined.⁴ 4-Nitrophenylarsonic Acid.⁵ Chlortetracycline Hydrochloride.⁶ Seriously deficient.⁷ Deficient in protein.

Feeds Containing Drugs—(Continued)

Manufacturer and Brand	Drug	Found (%)	Guaranteed (%)
Eastern States Farmers' Exchange, Inc.			
Cashmaker—WN.....	Nitrophenide	.019	.01875
Finisher.....	Nicarbazin	.0095	.0125
Finisher.....	Sulfaquinoxaline	.011	.0125
Minuteman.....	Sulfaquinoxaline	.036	.05
	Chlortetracycline	.0375 g/lb	.05 g/lb
Pacemaker.....	Nitrophenide	.018	.01875
Pacemaker Plus.....	Nicarbazin	.013	.0125
	Arsanilic Acid	.009	.009
Pacemaker Plus.....	Nicarbazin	.0125	.0125
	Arsanilic Acid	.009	.009
Sentinel.....	Chlortetracycline	.0625 g/lb	.1 g/lb
Elmore Milling Co., Inc.			
Elmore Chixsaver.....	Sulfaquinoxaline	.018	.0150
	3-Nitro	.003	.005
Elmore Turkey Growing Mash.....	4-Nitro	.027	.025
Elmore Turkey Starting Mash.....	Sulfaquinoxaline	.018	.0175
	3-Nitro	.021	.005
John W. Eshelman & Sons			
Red Rose T-C Feed.....	Chlortetracycline (Oxytetracycline ^a)	(.05 g/lb combined)	.025 g/lb .025 g/lb
Essex County Co-operative Farming Assn.			
S-X Starter and Broiler Ration.....	Sulfaquinoxaline	.019	.0175
S-X Starter and Broiler Ration—Connecticut	Nicarbazin	.0125	.0125
Formula.....	Sodium Arsanilate	.012	.0088
Farm Bureau Association			
Chick Starter Mash.....	Sulfaquinoxaline	.019	.015
Chlortetracycline (Aureomycin) Mixture.....	Chlortetracycline	.11 g/lb	.10 g/lb
Complete Developer Mash.....	Sulfaquinoxaline	.011	.0125
High Energy Broiler and Starter Mash Base.....	Sulfaquinoxaline	.052	.05
High Energy Broiler and Starter Mash.....	Sulfaquinoxaline	.023	.0175
Rabbit Food Pellets.....	Sulfaquinoxaline	.015	.015
Turkey Starter.....	Sulfaquinoxaline	.019	.0175
Flory Milling Co., Inc.			
Flory Starter Medimash No. 125.....	Sulfaquinoxaline	.017	.0125
Flory Stim-U-Lets.....	Chlortetracycline	.110 g/lb	.1 g/lb
Flory Turkey Grower.....	4-Nitro	.026	.0375
Fred A. Fountain			
Fountain's Improved High Energy Starter-Broiler Ration.....	Nitrophenide	.019	.01875
General Mills, Inc., Feed Stores			
Gold Medal Hi-Efficiency Broiler Mash.....	Nicarbazin	.011	.0125
	3-Nitro	.005	.005
Gold Medal Hi-Efficiency Broiler Mash.....	Nitrofurazone	.005	.0055
	3-Nitro	.005	.005
Gold Medal Turkey Fattener-Finisher Mash.....	4-Nitro	.017 [‡]	.05
Gold Medal Turkey Grower Mash.....	4-Nitro	.022 [‡]	.05
General Mills, Inc., Larroe Region			
Larro All Purpose Poultry Wormer.....	Nicotine	^a	.047
	Phenothiazine	.26	.26
Larro Surebroiler Finisher.....	Nicarbazin	.013	.0125
	3-Nitro	.004	.005
Larro Surebroiler Starter.....	Nicarbazin	.012	.0125
	3-Nitro	.005	.005
Larro Surechick.....	Nicarbazin	.0105	.0125
	Chlortetracycline	.07 g/lb	(.025 g/lb
Larro Surelift (Poultry).....	Oxytetracycline [‡]	—	(.025 g/lb
	Furazolidone	.006 ^a	.011
Larro Surepoult.....	Sulfaquinoxaline	.019	.0175
D. H. Grandin Milling Co.			
Grandin's Super Starter and Broiler Ration.....	Nicarbazin	.0159	.0125
Grandin's Super Starter and Broiler Ration.....	Sulfaquinoxaline	.016	.0175

[‡] Not determined.[‡] Seriously deficient.[‡] Oxytetracycline Hydrochloride.[‡] Total antibiotic activity measured as Chlortetracycline Hydrochloride.

Feeds Containing Drugs—(Continued)

Manufacturer and Brand	Drug	Found (%)	Guaranteed (%)
Hales & Hunter Co.			
Red Comb Broiler Mash.....	(Nicarbazin	.013	.0125
	3-Nitro	.004	.005
Red Comb Chick Starter.....	Nicarbazin	.0094	.0125
Red Comb Turkey Starter.....	Sulfaquinoxaline	.019	.0175
Harper Feed Mills, Inc.			
Harco Complete Starter Broiler Ration.....	(3-Nitro	.005	.005
	Nitrophenide	.015	.0125
Harco Hi-Energy Broiler Mash.....	(Nicarbazin	.0097	.0125
	3-Nitro	.004	.005
Jaquith & Co., Inc.			
Jaquith 20% Starter Mash.....	Sulfaquinoxaline	.019	.0125
Jaquith Starting Mash.....	Sulfaquinoxaline	.019	.0125
McMillen Feed Mills			
Master Mix Broiler Mash Special.....	(Nicarbazin	.010	.0125
	3-Nitro	.004	.005
Master Mix Calorized Broiler Concentrate.....	(Nicarbazin	.022	.03125
	3-Nitro	.016	.0125
Master Mix Calorized Broiler Concentrate.....	(Nicarbazin	.030	.03125
	3-Nitro	.013	.0125
Master Mix Calorized Broiler Concentrate.....	(Nicarbazin	.033	.03125
	3-Nitro	.012	.0125
Master Mix Poult Starter.....	Sulfaquinoxaline	.014	.01875
Maritime Milling Co., Inc.			
B-B Ma-Co Broiler Ration.....	(Arsanilic Acid	.010	.01
	Nicarbazin	.014	.0125
B-B Ma-Co Broiler Ration.....	Nicarbazin	.014	.0125
Merrimack Farmers' Exchange, Inc.			
Merrimack Fast-Gro Starter and Broiler.....	(Nicarbazin	.013	.0125
	Arsanilic Acid	.014	.01
Geo. O. Moon & Co., Inc.			
Moon Complete Starter and Broiler Mash.....	Sulfaquinoxaline	.017	.0125
Moon Super Starter and Broiler Mash.....	(Nicarbazin	.011	.0125
	Arsanilic Acid	.006	.0075
Moon Turkey Fattener Pellets.....	4-Nitro	.020	.025
Moon Turkey Grower Mash.....	4-Nitro	.020	.025
Ogden Grain Co.			
Ogden Broiler Finisher Feed ¹⁰	Arsanilic Acid	.010	.01
Ogden Hi-Energy Starter and Broiler ⁷	Nicarbazin	.0113	.0125
Ogden Turkey Grower and Developer.....	4-Nitro	.027	.025
Ogden Turkey Grower and Developer.....	4-Nitro	.026	.025
Park & Pollard Co., Inc.			
Hi-Power 22% Broiler Ration.....	(Arsanilic Acid	.010	.009
	Nicarbazin	.014	.0125
Hi-Power 22% Broiler Ration.....	(Arsanilic Acid	.009	.009
	Nicarbazin	.016	.0125
Hi-Power Broiler Ration.....	Nicarbazin	.0075 ⁶	.0125
Hi-Power Broiler Ration.....	Sulfaquinoxaline	.016	.0175
Lay or Bust All-Mash Grower.....	Sulfaquinoxaline	.018	.0175
Lay or Bust Chick Starter.....	Sulfaquinoxaline	.016	.0175
Lay or Bust Growing Feed.....	Sulfaquinoxaline	.015	.0175
Lay or Bust T.N.T.....	Furazolidone	.007	.011
	Chlortetracycline	.013	.011 ¹¹
Park & Pollard Complete Chick Starter.....	Sulfaquinoxaline	.018	.0175
Park & Pollard Complete Grower.....	Sulfaquinoxaline	.016	.0175

⁶ Seriously deficient.⁷ Deficient in protein.¹⁰ Deficient in fat.¹¹ Guarantee .011%. This is equal to .05 g/lb. Found .013%, equal to .06 g/lb.

Feeds Containing Drugs—(Continued)

Manufacturer and Brand	Drug	Found (%)	Guaranteed (%)
Ralston Purina Co.			
Purina Broiler Chow E.....	{3-Nitro	.004	.005
	{Nicarbazine	.012	.0125
Purina Broiler Chow Finisher E.....	3-Nitro	.006	.005
Purina Broiler Chow Finisher E.....	{3-Nitro	.005	.005
	{Nicarbazine	.013	.0125
Purina Broiler Chow Starter.....	3-Nitro	.003	.005
	Nicarbazin	.0127	.0125
Purina Broiler Chow Starter E.....	{3-Nitro	.005	.005
	{Nicarbazine	.013	.0125
Purina Chek-R-Aid E.....	Chlortetracycline	.085 g/lb	.1 g/lb
Purina Chick Growena E.....	Nicarbazin	.0096	.0125
Purina Chick Startena E.....	3-Nitro	.003	.0025
	Nicarbazin	.013	.0125
Purina Growena Developer E.....	Nicarbazin	.013	.0125
Purina Rabbit Chow Checkers (Complete Ration) E	Sulfaquinoxaline	.023	.025
Purina Turkey Fatena E.....	4-Nitro	.027	.025
Purina Turkey Growena E.....	4-Nitro	.025	.025
H. F. Rieser's Sons, Inc.			
Rieser's Dividend Chick Starter Mash.....	Nicarbazin	none ^a	.0125
Rieser's Dividend Chick Starter Mash.....	Nicarbazin	.0125	.0125
Rieser's Hi-Vite Chick Starter Mash ¹²	Nitrophenide	.005 ^a	.0125
Rieser's Hi-Vite Egg Breeder Mash ⁷	Oxytetracycline	.09 g/lb	.1 g/lb
Swansea Grain Co.			
Swansea Quality Broiler Ration Super.....	Nitrophenide	.011 ^a	.02
Swansea Quality Broiler Ration Super.....	Nitrophenide	none ^a	.02
Swansea Quality Broiler Ration Super.....	Nitrophenide	.020	.02
Swansea Quality Chick Starter.....	Nitrophenide	.009 ^a	.02
Swansea Quality Chick Starter.....	Nitrophenide	.008 ^a	.02
United Co-Operative Farmers, Inc.			
UCF Broiler Mash.....	Sulfaquinoxaline	.017	.0175
UCF Super Starter.....	Sulfaquinoxaline	.015	.015
Unity Feeds, Inc.			
Unity Advance Ration.....	Nitrophenide	.008 ^a	.015
Unity Broiler Grower.....	Nicarbazin	.008 ^a	.0125
Unity Broiler Maker.....	Nicarbazin	.0125	.0125
Ventura Grain Co.			
Every-Day Grower.....	Arsanilic Acid	none ^a	.005
C. P. Washburn Co.			
Made Right High Energy Breeder Mash.....	3-Nitro	.005	.005
Made Right Starting Feed.....	Sulfaquinoxaline	.015	.015
H. K. Webster Co.			
Blue Seal Advance Broiler.....	Sulfaquinoxaline	.016	.0175
Blue Seal Chick Starter.....	Sulfaquinoxaline	.0175	.0175
Blue Seal Chlortetracycline and Sulfaquinoxaline	{Chlortetracycline	.125 g/lb	.1 g/lb
Mixture.....	{Sulfaquinoxaline	.019	.0175
Blue Seal PN Medic-Aid.....	Phenothiazine	.26	.5
	Nicotine	1	.05
Blue Seal Sulfaquinoxaline Mixture ⁷	Sulfaquinoxaline	.064	.1
Blue Seal Super All-Mash Growing Ration.....	Sulfaquinoxaline	.021	.0175
Wirthmore Grain Co.			
Preferred High Energy Starter-Broiler Ration ¹²	Nitrophenide	.020	.01875

^a Not determined.^a Seriously deficient.⁷ Deficient in protein.¹² Excessive fiber.

Mineral Mixtures

Manufacturer and Brand	Calcium		Phosphorus		Manganese		Cobalt		Iodine		Salt	
	Found (%)	Guaranteed (%)	Found (%)	Guaranteed (%)	Found (%)	Guaranteed (%)	Found (%)	Guaranteed (%)	Found (%)	Guaranteed (%)	Found (%)	Guaranteed (%)
Amburgo Co., Inc. Ambur-Phos ¹	24.3	20.0	17.7	17.0	2.3	1.3	.01	.01	.016	.03	—	—
American Agricultural Chemical Co. Dicalcium Phosphate ²	28.9	25.0	21.2	21.0	—	—	—	—	—	—	—	—
H. J. Baker & Bros. Cura-Phos ³	21.0	34.3	14.8	14.0	—	—	—	—	—	—	—	—
Dairy Association Co., Inc. Kow-Kare.....	7.6	6.39	3.5	3.3	.15	.08	.034	.033	.29	.27	—	—
Eastman Chemical Products, Inc. Tecmangam ⁴	—	—	25.7	25.4	—	—	—	—	—	—	—	—
Dr. Hess & Clark, Inc. Dr. Hess Hog Special.....	25.0	15.0	4.5	3.5	.15	.10	—	—	—	—	—	—
Dr. Hess Poultry Pan-A-Min.....	26.7	24-29 ⁵	5.0	5.0	.14	.10	—	—	—	—	—	—
Dr. Hess Stock Tonic.....	24.1	15.0	3.9	3.5	.23	.10	—	—	.04	.04	19.3	23.0
Limestone Products Corp. of America Lime Crest Brand 0853 A. F. Calcite ⁷	33.5	33.0	—	—	—	—	—	—	—	—	8.2	8-10 ⁸
Lime Crest Brand Calcite Flour ⁹	34.2	33.0	—	—	—	—	—	—	—	—	20.5	23.0
John Reardon & Sons Di-Calcium Phosphate.....	—	—	20.5	19.0	—	—	—	—	—	—	—	—
Shea Chemical Corp. Pure Test Calcium Phosphate.....	26.3	20.0	18.8	18.5	—	—	—	—	—	—	—	—
Whitmoyer Laboratories, Inc. Tra-Min No. 1 ¹⁰	32.7	18.0	—	—	6.6	6.0	.03	.04	.10	.12	—	—
Tra-Min No. 1 ¹⁰	32.3	18.0	—	—	6.7	6.0	.04	.04	.10	.12	—	—

¹ Copper: found .05%, guaranteed .04%

Iron: found .80%, guaranteed .40%

Zinc: found .015%, guaranteed .006%

² Fluorine: found .002%, guaranteed .004% maximum³ Fluorine: found .34%, guaranteed .5% maximum⁴ Manganese sulfate: found 70.7%, guaranteed 70%⁵ Not determined.⁶ Minimum and maximum guarantees⁷ Magnesium: found 2.8%, guaranteed 2.6% maximum⁸ Magnesium: found 2.0%, guaranteed 2.6% maximum⁹ Copper: found .03%, guaranteed .04%

Iron: found 2.6%, guaranteed 2.5%

¹⁰ Copper: found 20%, guaranteed 20%

Iron: found 2.6%, guaranteed 2.5%

Drugs and Drug Mixtures

Manufacturer and Brand	Drug	Found (%)	Guaranteed (%)
Abbott Laboratories Pro-Gen Sodium	Sodium Arsanilate	100.0	100.0
American Cyanamid Co. Arsanilic Acid 20%	Arsanilic Acid	20.5	20.0
Aurofac 2A	Chlortetracycline Hydrochloride	3.7 g/lb	3.6 g/lb
Aurofac 2A	Chlortetracycline Hydrochloride	3.5 g/lb	3.6 g/lb
Aurofac 2A	Chlortetracycline Hydrochloride	3.6 g/lb	3.6 g/lb
Aurofac 10	Chlortetracycline Hydrochloride	10.2 g/lb	10.0 g/lb
Megasul 25%	Nitrophenide	26.0	25.0
Megasul-A9	Nitrophenide	25.0	25.0
	Arsanilic Acid	9.0	9.0
Commercial Solvents Corp. Baciferm-5 Antibiotic Feed Supplement	Bacitracin	5.0 g/lb	5.0 g/lb
No. 51 CSC Antibiotic Feed Supplement and Vitamin B ₁₂ Supplement	Procaine Penicillin	.5 g/lb ¹	2.0 g/lb
Merck & Co. Nicarbazin Mixture 25%	Nicarbazin	25.0	25.0
Nicarbazin Mixture 25%	Nicarbazin	25.5	25.0
Nicarbazin Mixture 25%	Nicarbazin	25.0	25.0
Pro Pen "4" Antibiotic Feed Supplement	Procaine Penicillin	4.0 g/lb	4.0 g/lb
Pro Pen "4" Antibiotic Feed Supplement	Procaine Penicillin	3.9 g/lb	4.0 g/lb
S.Q. 25% Sulfaquinoxaline	Sulfaquinoxaline	25.2	25.0
Chas. Pfizer & Co. TM 1+3 Antibiotic Feed Supplement & Vitamin B ₁₂ Supplement	Oxytetracycline Hydrochloride	.9 g/lb	1.0 g/lb
TM-5 Terramycin Animal Mix	Oxytetracycline Hydrochloride	4.3 g/lb	5.0 g/lb
Dr. Salsbury's Laboratories 3-Nitro Powder	3-Nitro-4-Hydroxyphenyl Arsonic Acid	10.1	10.0

¹ Deficient.

Oat Products

Manufacturer and Brand	Protein		Fat		Fiber		Results of Microscopic Examination
	Found (%)	Guaranteed (%)	Found (%)	Guaranteed (%)	Found (%)	Guaranteed (%)	
E. W. Bailey & Co. Pennant Crimped Oats		12.0	—	4.5		12.0	As represented
Canadian Grain Products, Ltd. Steamed Crimped Oats		12.0	—	—		10.6	As represented
Central Grain Co., Ltd. Ord. Mxd. Feed Oats	10.3	—	3.3	—	19.2	—	Ground mixed screenings
Chas. M. Cox Co. Ground Oats	11.8	—	—	—	10.7	—	As represented
General Mills, Inc., Purity Oats Div. Pulverized Oats	{11.9 13.4 12.4 13.6 14.9 13.3	{12.0 12.0 12.0 12.0 12.0 12.0	{— 5.2 — 5.3 — 5.1	{4.5 4.5 — 4.5 4.5 4.5	14.8 11.6 12.9 10.9 9.8 —	{13.0 13.0 13.0 13.0 13.0 13.0	Fiber excessive As represented As represented As represented As represented As represented
Medium Ground Oats	{14.5 13.9 11.0	{12.0 12.0 12.0	{— — —	{4.5 4.5 4.5	12.1 11.4 11.1	{13.0 13.0 13.0	As represented As represented As represented
Medium Ground White Oats	{14.2 13.3	{12.0 12.0	{— 5.1	{4.5 4.5	14.0 10.8	{13.0 13.0	Ground grain screenings As represented
Merrimack Farmers' Exchange, Inc. Sweetened Oat Mill By-Product	3.6	3.0	—	1.0	29.7	30.0	As represented
Quaker Oats Co. Peterborough Oat Mill By-Product Vim Oat Mill By-Product	{3.7 2.5	{2.5 2.5	—	{1.0 1.0	32.3 33.4	{32.0 32.0	As represented Ground oat hulls
H. K. Webster Co. Blue Seal Ground Oats	11.8	—	4.1	—	11.9	—	As represented

Alfalfa Meals

Manufacturer and Brand	Protein		Fiber		Carotene Milligrams per Pound	U.S.P. Units Vitamin A per Pound (Vitamin A Equivalent from Carotene)
	Found (%)	Guaranteed (%)	Found (%)	Guaranteed (%)		
Central Mills, Inc. Cent-O-Green Dehydrated Alfalfa Meal	{ 20.5 18.2	{ 17 17	{ 22.9 21.7	{ 27 27	{ 29.0 76.7	{ 48,340 127,860
Erie Alfalfa Mills, Inc. Leafy Erie Brand Oil-Treat Dehydrated Dust-Less Alfalfa Meal	17.0	17	32.8 ^a	27	15.0	25,005
Hayward, Inc. Dehydrated Alfalfa Meal	{ 18.2 17.7	{ 17 17	{ 27.4 28.2	{ 27 27	{ 39.0 39.0	{ 65,010 65,010
Keystone Chemurgic Corp. Solvent Extracted 20% Dehydrated Alfalfa Meal Residue	19.7	20	21.9 ^a	17	6.8	11,340
Keystone Dehydrators Keystone Super-Green Dehydrated Alfalfa Meal	{ 18.3 23.4	{ 17 17	{ 30.0 ^a 20.9	{ 27 27	{ 44.0 65.8	{ 73,350 109,690
	{ 18.6 22.4	{ 17 17	{ 30.9 ^a 24.4	{ 27 27	{ 66.510 35.8	{ 66,510 59,680
	{ 18.6 19.1	{ 17 17	{ 25.2 25.1	{ 27 27	{ 20.4 15.9	{ 34,010 26,510
National Alfalfa Dehydrating & Milling Co. Jack Rabbit 17% Dehydrated Alfalfa Meal	{ 17.0 17.9	{ 17 17	{ 29.2 ^a 24.2	{ 27 27	{ 35.4 41.8	{ 59,010 69,680
	{ 17.5 18.6	{ 17 17	{ 26.2 22.5	{ 27 27	{ 44.5 38.5	{ 74,180 64,180
	{ 17.7	{ 17	{ 21.7	{ 27	{ 66.7	{ 111,190
Neumond, Inc. Neumond's 17% Dehydrated Alfalfa Meal	20.6	17	21.2	27	70.4	117,360
Schoeneck Farms, Inc. Schoeneck's Super-Green Dehydrated Alfalfa Meal	{ 17.9 22.3	{ 17 17	{ 25.8 25.5	{ 27 27	{ 47.7 39.4	{ 79,520 65,680
W. J. Small Co. Small's 17% Dehydrated Alfalfa Meal	19.7	17	24.9	27	49.9	83,180
Sunny Slope Farms, Inc. Sunny Slope Farms Brand Dehydrated Alfalfa Meal	19.5	17	24.3	27	43.6	72,680

^a Fiber excessive.

Feed Supplements, Oils, and Vitamin and Drug Mixtures

Manufacturer and Brand	Vitamin A U. S. P. Units per Pound		Riboflavin Milligrams per Pound		Niacin Milligrams per Pound		Choline Chloride Milligrams per Pound	
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed
American Cyanamid Co., Fine Chemicals Division								
Fortafeed Brand Feed Supplement 4.....	—	—	4,320	4,000	—	—	—	—
S. F. Mix No. 70.....	—	—	2,175	2,000	2,120	2,000	10,896	10,000
Blatchford's Calf Meal Co.								
Blatchford's Calf-Pab.....	7,380	12,000	25.9	23	—	—	—	—
Borden Co., Special Products Div.								
Borden's MF-TL Blend 30D ¹	—	—	47.5	45	157	140	—	—
Pet-Pro Supplement for Dog Food ²	144,830	85,000	15.2	6	156	72	1,442	1,000
Commercial Solvents Corp.								
B.Y.-4 Riboflavin Supplement.....	—	—	4,510	4,000	—	—	—	—
B.Y.-N-100 Dried Grain & Cane Syrup Fermentation Solubles.....	—	—	54.5	45.4	414	500	—	—
B.Y.-N-100 Dried Grain & Cane Syrup Fermentation Solubles.....	—	—	75	45.4	286	500	—	—
B.Y.-250 Dried Grain & Cane Syrup Fermentation Solubles.....	—	—	165	114	—	—	—	—
B.Y.-500 Dried Grain & Cane Syrup Fermentation Solubles.....	—	—	349	228	—	—	—	—
CSC Choline Chloride.....	—	—	—	—	—	—	70 ⁷ / ₁₀₀	70 ⁷ / ₁₀₀
CSC Choline Chloride Supplement.....	—	—	—	—	—	—	24 ⁷ / ₁₀₀	25 ⁷ / ₁₀₀
Dave's Laboratories, Inc.								
Dave's Vitamelk (D.V. Base) ³	1,900	14,500	242	31.75	182	180	3,950	3,500
UCF No. 1 ⁴	—	—	425	400	3,520	4,000	72,840	93,500
General Mills, Inc.								
Gold Medal Premix No. 1 ⁵	351,850	300,000	277	250	1,700	1,600	43,584	36,000
Gorton-Pew Fisheries, Inc.								
Gorton's A1-Blend "Junior" ⁶	30,600	30,000	22	18	241	200	—	—
Gorton's A1-Blend "Senior" ⁷	92,200	50,000	13	14	164	200	—	—
Cod Liver Oil for Turkey Blend.....	4,800*	4,000*	—	—	—	—	—	—
Gorton's A & D Feeding Oil.....	1,920*	1,500*	—	—	—	—	—	—
Gorton's Mar-Vi-Tic Blend.....	99,200	90,000	410	400	460	460	—	—
Gorton's Mar-Vi-Tic Blend.....	5,340*	5,000*	—	—	—	—	—	—

¹ Procaine Penicillin: found .025 g/lb, guaranteed .05 g/lb.² Betaine Chloride: found 5,085 mg/lb, guaranteed 5,000 mg/lb.³ Thiamine Hydrochloride: found 13.5 mg/lb, guaranteed 9 mg/lb.⁴ Procaine Penicillin: found .031 g/lb, guaranteed .03 g/lb.⁵ Procaine Penicillin: found .45 g/lb, guaranteed .6 g/lb.⁶ Procaine Penicillin: found .23 g/lb, guaranteed .4 g/lb.⁷ Carotene: found 7.1 mg/lb, guaranteed 9 mg/lb.⁸ Carotene: found 13.1 mg/lb, guaranteed 12.0 mg/lb.

Total Vitamin A activity: found 114,000 U.S.P. units/lb., guaranteed 70,000 U.S.P. units/lb.

*U.S.P. units Vitamin A per gram.

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand	Vitamin A U. S. P. Units per Pound		Riboflavin Milligrams per Pound		Niacin Milligrams per Pound		Choline Chloride Milligrams per Pound	
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed
Haffenreffer & Co., Inc. Haffenreffer Brewers Dried Yeast	—	—	10.5	—	—	—	—	—
H. P. Hood & Sons, Inc. Dried Skimmed Milk	—	—	7.8	—	—	—	—	—
Illinois Yeast Co. Yeast Glow Cultured Yeast	—	—	27	45	117	227	446	317
Nopco Chemical Co. Nopco Broiler Premix No. 3*	249,700	300,000	303	300	4,000	4,000	24,000	20,000
Nopco Custom Mix	1,362,000	1,167,000	572	667	6,900	6,667	—	—
Nopco Finisher Premix	—	—	1,938	2,000	6,700	6,667	—	—
Nopco Soluble Niacin Premix	—	—	—	—	313,400	313,400	—	—
Nopco Vitamin A Feeding Oil	8,580*	8,000*	—	—	—	—	—	—
Publicker Industries, Inc. "Paco" Molasses Distillers Dried Solubles	—	—	20	—	—	—	—	—
Stabilized Vitamins, Inc. Permadry Vitamin A & D Product in Powder Form	14,900*	10,000	—	—	—	—	—	—
Western Condensing Co. Pebbles M-N-C	—	—	27.2	23	—	—	—	—
Pebbles M-N-C	—	—	23.6	23	—	—	—	—
Whitmoyer Laboratories, Inc. Clo-Meal	—	—	166	100	854	700	4,720	5,000
Clo-Meal	—	—	120	100	872	700	6,536	5,000
Clo-Meal	—	—	105	100	761	700	6,265	5,000
Gro-Tain	—	—	23.8	20	—	—	—	—
Gro-Tain	—	—	31	20	—	—	—	—
Vitamin Pre-Mix No. 2	—	—	2,125	2,000	21,790	20,000	—	—
Whit-M	2,400*	2,250*	—	—	4,140	4,000	—	—
Whit-Vim Custom Mix	248,200	300,000	605	400	—	—	—	—
Whitmoyer Feeding Oil	2,030*	1,500*	—	—	—	—	—	—

* Procaine Penicillin; found 1.19 g lb. guaranteed .8 g lb. Arsanilic Acid; found 3.5%, guaranteed 3.61%.

* U.S.P. units Vitamin A per gram.

Directory of Manufacturers who Registered Feeds for Sale in Massachusetts in 1956

- Acme-Evans Co., Inc., 902 West Washington Ave., Indianapolis 9, Ind.
 L. P. Adams Co., 484 Housatonic St., Dalton, Mass.
 Agri-Tech, Inc., 1125 Board of Trade Bldg., Kansas City, Mo.
 Ajax Dog Food Co., 49 Pine St., Dedham, Mass.
 Albers Milling Co., 5045 Wilshire Blvd., Los Angeles 36, Cal.
 Allied Mills, Inc., Chicago, Ill.
 American Agricultural Chemical Co., 50 Church St., New York 7, N. Y.
 American Crystal Sugar Co., 600 Boston Bldg., Denver, Col.
 American Cyanamid Co., Fine Chemicals Div., Princeton, N. J.
 American Maize-Products Co., 250 Park Ave., New York 17, N. Y.
 Arcady Farms Milling Co., 500 West 138th St., Chicago 27, Ill.
 Archer-Daniels-Midland Co., Linseed Oil Meal Dept., P.O. Box 839, Minneapolis 2, Minn.
 Archer-Daniels-Midland Co., Soybean Oil Meal Dept., 700 Investors Bldg., Minneapolis, Minn.
 Armour & Co., Pet Food Division, Union Stock Yards, Chicago 9, Ill.
 Ashcraft-Wilkinson Co., 601 Trust Co. of Georgia Bldg., Atlanta, Ga.
- B & W Canning Co., Inc., P.O. Box 98, Groveland, Florida
 E. W. Bailey & Co., Inc., Montpelier, Vt.
 H. J. Baker & Bro., 600 Fifth Ave., New York 20, N. Y.
 Bannock Food Co., Inc., Esco Bldg., East Biddle St., West Chester, Penn.
 Barber & Bennett, Inc., Arch and Church Sts., Albany, N. Y.
 Battle Creek Dog Food Co., 60 East State St., Battle Creek, Mich.
 Beacon Milling Co., Inc., Cayuga, N. Y.
 Berkman Grain Co., North Franklin, Conn.
 Best Dog Food Co., 447 Timpson Place, Bronx 55, N. Y.
 Best Feeds & Farm Supplies, Inc., 271 West Wheeling St., Washington, Penn.
 Best Foods, Inc., 1442 Marine Trust Bldg., Buffalo, N. Y.
 Blatchford Calf Meal Co., 2 Madison St., Waukegan, Ill.
 Borden Co., Special Products Div., 350 Madison Ave., New York 17, N. Y.
 Borden Grain Co., 700 West Water St., Taunton, Mass.
 Borden's Soy Processing Co., Division of the Borden Co., Kankakee, Ill.
 Brown-Forman Distillers Corp., 1908 Howard St., Louisville, Ky.
 George B. Brown Corp., Ipswich, Mass.
 Buckeye Cellulose Corp., 6th & Main Sts., Cincinnati, Ohio
- Cal-Cod Process Co., Box 26, New Hamburg, N. Y.
 Cargill, Inc., 200 Grain Exchange Bldg., Minneapolis 15, Minn.
 Central Soya Co., Inc., Fort Wayne, Ind.
 Citrus Feed Co., P.O. Box 513, Lakeland, Florida
 Clinton Corn Processing Co., Clinton, Iowa
 Clyde Milling Corp., 15 Sodus St., Clyde, N. Y.
 Cocke & Co., 208 Wm. Oliver Bldg., Atlanta 3, Ga.
 Colby Cooperative Starch Co., Box 162, Caribou, Maine
 Commercial Solvents Corp., 1331 South First St., Terre Haute, Ind.
 Community Service, Inc., Canaan, Conn.
 Consolidated Products Co., 119 North Washington Ave., Danville, Ill.
 Consolidated Rendering Co., 178 Atlantic Ave., Boston 10, Mass.
 Corn Products Refining Co., 17 Battery Place, New York 4, N. Y.
 Courcy & Sons Grain Co., Taunton, Mass.
 Cover Grain & Feed Co., 150 Middle St., Lowell, Mass.
 Chas. M. Cox Co., 177 Milk St., Boston 9, Mass.
 Crawford Brothers, Inc., 109 Delaware St., Walton, N. Y.
 Crouse Chinchilla Farm, R.F.D. 1, Stafford Springs, Conn.
- Dairy Association Co., Inc., Lyndonville, Vt.
 Dairymen's League Co-Operative Association, Inc., 100 Park Ave., New York 17, N. Y.
 Dawe's Laboratories, Inc., 4800 South Richmond St., Chicago 32, Ill.
 Dawnwood Farms, Smithfield Road, Amenia, N. Y.
 Dean & Lee, Chemung St., Horseheads, N. Y.

- Decatur Milling Co., Inc., 717 North Union St., Decatur, Ill.
 Delaware Mills, Inc., Front St., Deposit, N. Y.
 Delphos Grain & Soya Products Co., P.O. Box 231, Delphos, Ohio
 F. Dield & Sons, Inc., 180 Linden St., Wellesley 81, Mass.
 Dietrich & Gambrell, Inc., South Carroll St., Frederick, Md.
 Dominion Malting (Ontario) Limited, 307 Fleet St. East, Toronto, Ont., Canada
 Dougherty Feed Co., Inc., Willow St., Louisville, Ohio
 John C. Dow Co., 40-44 Prospect St., Gloucester, Mass.
 Drackett Products Co., 5020 Spring Grove Ave., Cincinnati 32, Ohio
 J. L. Dunnell & Son, Bernardston, Mass.
 E. I. duPont de Nemours & Co., Wilmington, Del.
 Eastern States Fairfairs' Exchange, Inc., 26 Central St., West Springfield, Mass.
 Eastman Chemical Products Co., Inc., Kingsport, Tenn.
 Eckhart Milling Co., 1300 West Carroll Ave., Chicago, Ill.
 Elmore Milling Co., Inc., Oneonta, N. Y.
 Erie Alfalfa Mills, Inc., Erie, Mich.
 John W. Eshelman & Sons, 244 North Queen St., Lancaster, Penn.
 Essex County Co-operative Farming Association, Topsfield, Mass.
 Evans Milling Co., Inc., 1730 West Michigan St., Indianapolis, Ind.
 Farm Bureau Association, 155 Lexington St., Waltham 54, Mass.
 Farm Bureau Cooperative Association, Inc., 245 North High St., Columbus 16, Ohio
 Farmers Feed Co., 375 Johnson Ave., Brooklyn 6, N. Y.
 Ferneau Grain Co., Gibson Bldg., Blanchester, Ohio
 Fishery Products, Inc., 1200 West 9th St., Cleveland 13, Ohio
 Florida Citrus Cannery Cooperative, P.O. Box 1111, Lake Wales, Florida
 Flory Milling Co., Inc., Bangor, Penn.
 FMS, Inc., 5903 Northwest Highway, Chicago 31, Ill.
 Fred A. Fountain, 355 Tremont St., Taunton, Mass.
 Fruit Industries, P.O. Box 338, Bradenton, Florida
 General Foods Corp., 250 North St., White Plains, N. Y.
 General Foods Corp., Corn Mill Div., 180 South Dearborn Ave., Kankakee, Ill.
 General Foods Corp., Gaines Div., 180 South Dearborn Ave., Kankakee, Ill.
 General Mills, Inc., 400 Second Ave. South, Minneapolis, Minn.
 General Mills, Inc., Feed Stores, 15800 West McNicholas Rd., Detroit 35, Mich.
 General Mills, Inc., Larowe Region, 15800 West McNicholas Rd., Detroit 35, Mich.
 Glidden Co., Soya Products Div., 1825 North Laramie Ave., Chicago 39, Ill.
 Gloucester By-Products, Inc., State Fish Pier, Gloucester, Mass.
 Roy Goff & Co., Inc., 240 Fairfield Ave., Bridgeport, Conn.
 Goldenrod Oil Meal Sales Co., 727 Beale Ave., Memphis 1, Tenn.
 Gorton-Pew Fisheries Co., Ltd., 327 Main St., Gloucester, Mass.
 D. H. Grandin Milling Co., 1029 Allen St. Ext., Jamestown, N. Y.
 Great Atlantic & Pacific Tea Co., 817 Andrus Bldg., Minneapolis 2, Minn.
 Haffenreffer & Co., Inc., 30 Germania St., Boston 30, Mass.
 Hales & Hunter Co., 141 West Jackson Blvd., Chicago 4, Ill.
 D. Harbeck & Sons, 405 Earle St., New Bedford, Mass.
 Harper Feed Mills, Inc., 271 West Wheeling St., Washington, Penn.
 Hartz Mountain Products Corp., 36 Cooper Square, New York 3, N. Y.
 Hayward, Inc., Oak Harbor, Ohio
 Hess & Clark, Inc., 7th & Orange Sts., Ashland, Ohio
 Hi-Life Packing Co., 431 South Dearborn St., Chicago 5, Ill.
 Hi-Pro Associates, Inc., DuPont Highway, Frankford, Del.
 Hobart Laboratories, Inc., Walnut St., Auburn, Ind.
 Honeggers' & Co., Inc., Fairbury, Ill.
 H. P. Hood & Sons, Inc., 500 Rutherford Ave., Boston 29, Mass.
 E. C. & W. L. Hopkins, Inc., Greenfield, N. H.
 Hubinger Co., 601 Main St., Keokuk, Iowa
 Humphreys-Godwin Co., 2246 Park Ave., Memphis, Tenn.
 Illinois Cereal Mills, Inc., South Jefferson Ave., Paris, Ill.
 Illinois Yeast Co., Box 105, Princeton, Ill.
 J. F. Imbs Milling Co., 420 Merchants Exchange Bldg., St. Louis 2, Mo.

Independent Tallow Co., 39 Cedar St., Woburn, Mass.
International Milling Co., 800 McKnight Bldg., Minneapolis, Minn.
International Minerals & Chemical Corp., 20 North Wacker Drive, Chicago 6, Ill.
International Stock Food Corp., P.O. Box 271, Delhi, N. Y.

Jaquith & Co., Inc., 305 Main St., Woburn, Mass.

Kasco Mills, Division of Corn Products Sales Co., Waverly, N. Y.
Kellogg Co., Feed Dept., 235 Porter St., Battle Creek, Mich.
Spencer Kellogg & Sons, Inc., 98 Delaware Ave., Buffalo 2, N. Y.
Kennel Food Supply Co., Inc., 63 Mill Hill Ter., Fairfield, Conn.
Keystone Chemurgic Corp., R. D. No. 1, Bethlehem, Penn.
Keystone Dehydrators, Box 204, Nazareth, Penn.
H. C. Knoke & Co., 5728 West Roosevelt Road, Chicago 50, Ill.
Kraft Foods Co., 99 Park Ave., New York 16, N. Y.
Chas. A. Krause Milling Co., 404 East State St., Milwaukee 1, Wis.
Kronick's Coal & Grain Co., 43 Pleasant St., Adams, Mass.
Kuder Pulp Sales Co., Lake Alfred, Florida

Lauhoff Grain Co., P.O. Box 571, Danville, Ill.
Lauhoff Soya Co., P.O. Box 571, Danville, Ill.
Libby, McNeill & Libby, 4134 South Packers Ave., Chicago 9, Ill.
Libner Grain Co., Inc., 25 Commerce St., Norwalk, Conn.
Limestone Products Corp. of America, 122 Main St., Newton, N. J.
Lincoln Mills, Inc., 1203 West 23d St., Indianapolis, Ind.
L. B. Lovitt & Co., 314 Cotton Exchange Bldg., Memphis, Tenn.

McMillen Feed Mills, Div. of Central Soya Co., Inc., Fort Wayne 2, Ind.
Mansfield Milling Co., Mansfield, Mass.
Maple Leaf Milling Co., Ltd., Toronto, Ont., Canada
Marden-Wild Corp., 500 Columbia St., Somerville 43, Mass.
Maritime Milling Co., Inc., 100 South Elmwood Ave., Buffalo 2, N. Y.
Marvin Grain Co., 31 Cove Road, South Dartmouth, Mass.
Merchants Creamery Co., 536 Livingston St., Cincinnati 14, Ohio
Merck & Co., Inc., Rahway, N. J.
Merrimack Farmers' Exchange, Inc., 10 Pleasant St. Ext., Concord, N. H.
Methuen Grain Co., Methuen, Mass.
Miller Alfalfa Co., Jackson and Gorman Sts., Defiance, Ohio
Miner-Hillard Milling Co., 826 Second National Bank Bldg., Wilkes-Barre, Penn.
Minute Maid Corp., P.O. Drawer 202, Leesburg, Florida
Geo. Q. Moon & Co., Inc., 201 Chenango St., Binghamton, N. Y.
Jas. F. Morse & Co., 11 Horace St., Somerville 43, Mass.
Morton Salt Co., 120 South LaSalle St., Chicago 3, Ill.
Mowat, Wilson & Co., 18675 James Couzens Highway, Detroit 35, Mich.
Myzon, Inc., 3129 West 47th St., Chicago 32, Ill.

Nappanee Milling Co., Inc., 301 South Jackson St., Nappanee, Ind.
National Alfalfa Dehydrating Co., 101 South 4th St., Lamar, Col.
National Biscuit Co., 449 West 14th St., New York 14, N. Y.
National Biscuit Co., Toledo Mill, P.O. Box 1528 Central Sta., Toledo 3, Ohio
National Distillers Products Corp., 99 Park Ave., New York 16, N. Y.
National Oats Co., 1515 H Ave. N.E., Cedar Rapids, Iowa
National Vitamin Products Co., 3401 Hiawatha Ave., Minneapolis 6, Minn.
Neumond Co., 300 Merchants Exchange Bldg., St. Louis 2, Mo.
Nitrogen Div., Allied Chemical & Dye Corp., P.O. Drawer 61, Hopewell, Va.
Nopco Chemical Co., Harrison, N. J.
Northern Ohio Sugar Co., 1530 Sixteenth St., Denver, Col.

Ogden Grain Co., Utica, N. Y.
Old Mother Hubbard Dog Food Co., Inc., 40-44 Prospect St., Gloucester, Mass.
Orleans Candy Co., 431 South Dearborn St., Chicago 5, Ill.
Owensboro Grain Co., Inc., 102 Lewis St., Owensboro, Ky.

- Pabst Brewing Co., 221 North LaSalle St., Chicago, Ill.
 Palm Grain Co., Lowell, Mass.
 Philip R. Park, Inc., Outer Harbor, San Pedro, Cal.
 Park & Pollard Co., Inc., 356 Hertel Ave., Buffalo 7, N. Y.
 George H. Parker Grain Co., 56 Water St., Danvers, Mass.
 Pasco Packing Co., Dade City, Florida
 Patent Cereals Co., Geneva, N. Y.
 Penick & Ford Ltd., Inc., Cedar Rapids, Iowa
 Chas. Pfizer & Co., Inc., 11 Bartlett St., Brooklyn 6, N. Y.
 Pillsbury Mills, Inc., Minneapolis 2, Minn.
 Post Cereals Division, General Foods Corp., 275 Cliff St., Battle Creek, Mich.
 Publicker Industries, Inc., 1429 Walnut St., Philadelphia 2, Penn.
- Quaker Oats Co., Merchandise Mart Plaza, Chicago 54, Ill.**
- Ralston Purina Co., 635 South Eighth St., St. Louis 2, Mo.
 John Reardon & Sons Division of Wilson & Co., Inc., 51 Waverly St., Cambridge, Mass.
 Redbird Farm, Inc., Wrentham, Mass.
 Red Star Yeast & Products Co., 221 East Buffalo St., Milwaukee 1, Wis.
 James Richardson & Sons, Ltd., Royal Bank Bldg., King and Yonge Sts., Toronto, Ont., Canada
 H. F. Rieser's Sons, Inc., West Leesport, Penn.
 D. F. Riley, Hatfield, Mass.
 Riverside Elevator Co., 1366 Penobscot Bldg., Detroit, Mich.
 Rudhard Products, Inc., 248 Michigan Ave., Buffalo 3, N. Y.
 Russell-Miller Milling Co., 860 Grain Exchange, Minneapolis 15, Minn.
 Ryther & Warren Co., Belchertown, Mass.
- Schenley Distillers, Inc., 350 Fifth Ave., New York 1, N. Y.
 Schoeneck Farms, Inc., R.D. No. 3, Nazareth, Penn.
 Joseph E. Seagram & Sons, Inc., Seventh Street Road, Louisville 1, Ky.
 Shea Chemical Corp., P.O. Box 326, Jeffersonville, Ind.
 Sherwin-Williams Co., 101 Prospect Ave. N.W., Cleveland, Ohio
 Shirriff-Horsey Corporation, Ltd., Plant City, Florida
 Silmo Chemical Corp., Box 352, Vineland, N. J.
 David Small, East Hartford, Conn.
 W. J. Small Co., Division of Archer-Daniels-Midland Co., 1200 Oak St., Kansas City 6, Mo.
 Allen V. Smith, Inc., Marcellus Falls, N. Y.
 B. T. Smith Concentrates, Inc., P.O. Box 398, Lakeland, Florida
 J. H. Smith Grain, Inc., Haverhill, Mass.
 Smith Meal Co., Inc., Amagansett, N. Y.
 Southern Fruit Distributors, Inc., P.O. Box 671, Orlando, Florida
 Spratt's Patent (America) Ltd., 18 Congress St., Newark 5, N. J.
 A. E. Staley Manufacturing Co., Eldorado and 22nd Sts., Decatur, Ill.
 Standard Brands, Inc., 595 Madison Ave., New York 22, N. Y.
 Standard Brands, Inc., Pet Food Div., 595 Madison Ave., New York 22, N. Y.
 Sturdy Dog Food Co., 2103 West Genesee St., Syracuse, N. Y.
 Suni-Citrus Products Co., Haines City, Florida
 Sunny Slope Farms, Inc., P.O. Box 234, Nazareth, Penn.
 Sunshine Biscuits, Inc., Milling Division, Mechanic St., Grafton, Ohio
 Swansea Grain Co., 970 Brayton Ave., Somerset, Mass.
 Swift & Co., Pard Dept., Union Stock Yards, Chicago 9, Ill.
 Swift & Co., P.O. Box 110, Fostoria, Ohio
- Taft Bros., Uxbridge, Mass.
 Tioga Mills, Inc., Waverly, N. Y.
- Union Starch & Refining Co., 301 Washington St., Columbus, Ind.
 United Co-Operative Farmers, Inc., 339 Broad St., Fitchburg, Mass.
 Unity Feeds, Inc., 177 Milk St., Boston, Mass.
 George Urban Milling Co., 332 North Oak St., Buffalo 3, N. Y.
 U. S. Industrial Chemical Co., Div. of National Distillers Products Corp., 99 Park Ave., New York 16, N. Y.

Van Iderstine Co., 37-30 Review Ave., Long Island City 1, N. Y.
Ventura Grain Co., 7 Purchase St., Taunton, Mass.
Vitality Mills, Inc., 250 West 87th St., Chicago 20, Ill.
Hiram Walker & Sons, Inc., Foot of Edmund St., Peoria, Ill.
C. P. Washburn Co., Middleboro, Mass.
H. K. Webster Co., 24 West St., Lawrence, Mass.
Western Condensing Co., Box 739, Appleton, Wis.
Whitmoyer Laboratories, Inc., 19 North Railroad St., Myerstown, Penn.
Wilson & Co., Inc., 4100 South Ashland Ave., Chicago 9, Ill.
Wilson's Corn Products, East Fourth St., Rochester, Ind.
Wirthmore Grain Co., Taunton, Mass.
Worcester Grain & Coal Co., 294 Franklin St., Worcester 8, Mass.
Yieldmor Feeds, Inc., 101 South Downing St., Piqua, Ohio

Inspection of Commercial Fertilizers and Agricultural Lime Products

BY

Fertilizer Control Service Staff

Massachusetts Agricultural Experiment Station

May 7, 1957



This is the eighty-third report of the Massachusetts Fertilizer Control made in accordance with Chapter 94, Sections 250 to 261, inclusive, of Massachusetts General Laws 1920, as amended by Chapter 67, Acts of 1933.

INSPECTION OF COMMERCIAL FERTILIZERS AND AGRICULTURAL LIME PRODUCTS FOR THE SEASON OF 1956

BY FERTILIZER CONTROL SERVICE STAFF

John W. Kuzmeski, *Research Professor, Official Chemist*
Albert F. Spelman, *Associate Research Professor*
C. Tyson Smith, *Associate Research Professor, Microscopist*
Bertram Gersten, *Assistant Research Professor*
David F. Owen, Jr., *Research Instructor*
Jeannette G. Davis, *Research Instructor*
Joseph Conklin, *Inspector*
Edward F. Vlach, *Technical Assistant*
Cora B. Grover, *Principal Clerk*

PERTINENT FACTS RELATING TO MASSACHUSETTS FERTILIZER LAW

Commercial Fertilizers

Registration is required annually on January 1.
Registration fee is \$8 for each element: nitrogen, phosphoric acid, potash, and
magnesia.
Label must show:
Net weight of fertilizer
Name, brand or trade mark, and grade
Name and address of manufacturer
Guaranteed analysis: nitrogen, available phosphoric acid, water soluble
potash. A guarantee of total phosphoric acid may be used instead of
available phosphoric acid for bone, untreated phosphate rock, tankage,
dried and pulverized manures, ground seeds, and wood ashes.
Tonnage reports are required semiannually, on January 1 and July 1.
Tonnage fee: 6 cents per ton of 2,000 pounds

Lime Products

Registration is required annually on January 1.
Registration fee: \$12 for each brand.
Label must show:
Net weight of product
Name, brand or trade mark, and form of lime
Name and address of manufacturer
Guaranteed analysis: calcium oxide, magnesium oxide, carbonates of cal-
cium and magnesium, or calcium sulfate (in gypsum or land plaster)

Make checks payable to Massachusetts Agricultural Experiment Station and
send correspondence to

JOHN W. KUZMESKI
Massachusetts Agricultural Experiment Station
Amherst, Mass.

FERTILIZER TONNAGE

Tonnage of Fertilizer Sold in Massachusetts

	1954		1955	
	Jan. 1 to July 1	July 1 to Dec. 31	Jan. 1 to July 1	July 1 to Dec. 31
Mixed fertilizers.....	58,992	10,362	59,061	9,615
Fertilizer chemicals and materials unmixed.....	10,013	4,993	10,138	3,915
Pulverized animal manures.....	1,526	430	1,870	425
Totals.....	70,531	15,785	71,069	13,955

Tonnage of Mixed Fertilizers, January 1 to December 31, 1955

Grade*	Tonnage		Brands	Grade*	Tonnage		Brands
	Jan. 1 to July 1	July 1 to Dec. 31			Jan. 1 to July 1	July 1 to Dec. 31	
5-10-10	14,482	1,948	32	0-15-30	494	320	6
6-3-6	6,786	318	12	8-12-12	472	38	—
5-8-7	5,752	396	18	10-6-4	439	52	6
10-10-10	5,134	1,111	14	0-12-24	381	160	—
7-7-7	4,187	636	16	5-5-15	336	17	5
8-16-16	3,721	1,142	12	4-12-16	291	85	5
6-10-4	2,707	175	8	3-12-12	261	118	—
5-10-5	2,276	325	29	4-12-8	260	4	—
6-8-8	1,820	118	12	0-14-14	209	83	8
6-12-12	994	45	—	0-10-20	208	73	7
8-6-4	971	268	7	12-8-4	178	17	5
8-6-2	921	195	8	15-30-15	62	1	5
9-7-4	871	440	—	12-12-12	32	6	—
8-8-8	744	14	6	Miscellaneous	3,424	1,220	—
0-20-20	648	290	9	Totals	59,061	9,615	344

*The grade represents the plant food guarantee and is expressed in the order of nitrogen, available phosphoric acid, and potash.

Tonnage of Unmixed Materials, January 1 to December 31, 1955

Material	Tonnage		Brands
	Jan 1 to July 1	July 1 to Dec. 31	
Process tankage and activated sewage.....	2,778	1,346	18
Superphosphate.....	2,418	979	13
Pulverized animal manures.....	1,870	425	30
Cottonseed meal.....	1,250	75	5
Ammonium nitrate.....	934	265	—
Nitrate of soda.....	754	166	—
Castor pomace.....	624	210	7
Bone meal.....	443	191	13
Muriate of potash.....	315	148	9
Cyanamid.....	195	38	—
Rock phosphate.....	106	137	—
Sulfate of ammonia.....	90	59	9
Urea.....	88	23	7
Linseed meal.....	38	80	—
Miscellaneous.....	105	198	—
Totals.....	12,008	4,340	137

MIXED FERTILIZERS

Deficiency Statistics for Mixed Fertilizers

Manufacturer	Number of Samples		Number of Tests				
	Analyzed	With No Deficiencies	Totals	Less than $\frac{1}{4}$ Per Cent Below Guarantee	Between $\frac{1}{4}$ and $\frac{1}{2}$ Per Cent Below Guarantee	Between $\frac{1}{2}$ and $\frac{3}{4}$ Per Cent Below Guarantee	More than $\frac{3}{4}$ Per Cent Below Guarantee
Agricultural Products.....	1	0	3	0	0	1	0
American Agricultural Chemical Co. . .	66	37	194	11	12	1	5
American Chemical Paint Co.	1	0	3	0	0	0	1
Apothecaries Hall Co.	21	19	69	2	0	0	0
Armour Fertilizer Works.	16	9	48	5	2	0	2
Atlas Fish Fertilizer Co.	1	1	3	0	0	0	0
F. A. Bartlett Tree Expert Co.	1	1	3	0	0	0	0
Joseph Breck & Sons Corp.	4	4	13	0	0	0	0
California Spray-Chemical Corp.	2	1	6	0	1	0	0
Carac Corp.	2	2	6	0	0	0	0
Chesnicka Landscape Service.	2	1	6	1	0	0	0
Clinton Nurseries.	2	2	6	0	0	0	0
Consolidated Rendering Co.	40	30	119	3	4	2	2
Davison Chemical Co.	6	1	17	2	2	1	1
Doggett-Pfeil Co.	3	2	6	0	0	0	1
E. I. du Pont de Nemours & Co.	1	1	3	0	0	0	0
Eastern States Farmers' Exchange, Inc.	23	17	81	1	3	1	1
Essex County Cooperative Farming Association.	3	3	10	0	0	0	0
Excell Laboratories, Inc.	1	1	3	0	0	0	0
Faesy & Besthoff, Inc.	2	1	6	1	0	0	0
Farm Bureau Assn.	7	6	24	0	1	0	0
Forward House Div., Olin Mathieson Chemical Corporation.	2	2	6	0	0	0	0
Frank's Market Garden.	1	1	3	0	0	0	0
Frost & Higgins Co.	1	1	3	0	0	0	0
Garden Research Laboratories.	1	0	4	0	0	0	1
Garden Supply Sales Corp.	1	1	3	0	0	0	0
Garfield Williamson, Inc.	1	1	3	0	0	0	0
Goulard & Olena, Inc.	5	4	15	0	0	0	1
C. L. Halvorson Tree Service.	1	1	3	0	0	0	0
Heller Greenhouse Laboratories.	1	0	3	0	0	0	1
Hydroponic Chemical Co., Inc.	1	1	3	0	0	0	0
Hy-Trous Corp.	1	1	3	0	0	0	0
International Minerals & Chemical Corporation.	25	19	94	4	2	0	0
Kapco Div., Summers Fertilizer Co. . .	1	0	3	0	0	0	1
Lebanon Chemical Corp.	5	2	15	0	2	1	0
Lexington Gardens, Inc.	1	1	3	0	0	0	0
John D. Lyon, Inc.	1	1	3	0	0	0	0
Monsanto Chemical Co.	1	1	3	0	0	0	0
Nitrogen Div., Allied Chemical & Dye Corp.	1	1	3	0	0	0	0
Old Deerfield Fertilizer Co., Inc. . . .	25	21	77	2	2	0	0
Old Fox Agricultural Sales, Inc.	8	5	25	2	0	1	0
Olds & Whipple, Inc.	9	9	28	0	0	0	0
Parks-Barnes, Inc.	3	2	9	1	0	0	0
Penn Co.	1	1	3	0	0	0	0
Plant Products Corp.	1	0	3	0	0	1	0
Plantabbs Corp.	1	1	3	0	0	0	0
Ra-Pid-Gro Corp.	1	0	3	0	0	0	1
Rogers & Hubbard Co.	24	20	73	2	2	0	1
Rose Manufacturing Co.	1	0	3	0	0	1	0
O. M. Scott & Sons Co.	3	3	9	0	0	0	0
Sears, Roebuck & Co.	7	4	21	0	0	1	2
Soil Builders International Corp.	1	1	3	0	0	0	0
Stimuplant Laboratories Co.	2	2	6	0	0	0	0
Swift & Co., Plant Food Div.	8	7	24	0	1	0	0
Universal Chemical Co.	1	1	3	0	0	0	0
Valley Feed & Supply Co., Inc.	1	1	3	0	0	0	0
Winslow Nurseries, Inc.	2	1	6	0	0	0	1
F. H. Woodruff & Sons, Inc.	1	0	3	1	0	0	0
Totals.	356	256	1,107	38	34	11	22

EXPLANATION OF TABLE OF ANALYSES

Guarantee. The plant food guarantee or the grade of each fertilizer is made a part of the trade name under the heading "Name of Manufacturer and Brand" and is expressed as nitrogen, available phosphoric acid, and water soluble potash in that order.

Mixtures Substantially Complying with the Guarantee. In addition to those fertilizers that meet their guarantees in every respect, this table includes also a list of those mixtures that have one or more elements below the guaranteed percentage but have a shortage of less than \$1 per ton.

This table, in addition to the data mentioned in the next paragraph, contains only results of analytical tests pertaining to the average amount of water insoluble nitrogen present in some brands, since this information is of value to tobacco growers and other users of fertilizers containing a high percentage of this form of nitrogen.

Potash Forms. Tests for chlorine are made only on tobacco mixtures and on those fertilizers that carry a guarantee of potash in forms other than *muriate*. When the amount of chlorine present in any brand exceeds the tolerance allowed for that brand, this fact is indicated by a footnote.

Mixtures Showing a Commercial Shortage of \$1 or More per Ton

Manufacturer and Brand	Nitrogen Found		Available Phosphoric Acid Found	Water Soluble Potash (K ₂ O) Found	Approximate Commercial Shortage per Ton
	Water Insoluble Organic	Total			
American Agricultural Chemical Co.					
AA Quality 8-12-12.....		7.58	12.00	12.00	\$1.32
Agrico Phosphate & Potash 0-15-30.....	—		15.00	28.80	1.24
Armour Fertilizer Works					
Armour's Big Crop 0-20-20...	—		19.51	18.60	2.64
Armour's Big Crop 10-10-10...		9.06	9.80	10.80	2.75
Consolidated Rendering Co.					
Corenco 8-16-16 (a).....	—	8.00	15.47	15.70	1.41
Davison Chemical Co.					
8-16-16 Davco Granulated...	—	6.97	16.15	16.00	2.80
Sears, Roebuck & Co.					
Cross Country Plant Food 5-10-5.....	—	4.03	10.05	5.70	2.00

a See table of "Mixtures substantially complying with guarantees."

Mixtures Substantially Complying with Guarantees

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Agricultural Products		
Apothecaries Club 8-6-4	1	—
American Agricultural Chemical Co.		
AA Quality 0-10-30	1	—
AA Quality 0-15-30	1	—
AA Quality 0-20-20	1	—
AA Quality 4-12-16	1	—
AA Quality 5-8-7	1	—
AA Quality 5-8-10	4	—
AA Quality 5-10-10	2	—
AA Quality 6-8-8	5	—
AA Quality 8-8-8	4	—
AA Quality 8-16-16	2	—
AA Quality 10-10-10	1	—
Agrico Phosphate & Potash 0-20-20	1	—
Agrico for Seeding Down 3-12-12	1	—
Agrico for Corn 4-12-8	1	—
Agrico for New England 5-8-7	4	—
Agrico Bulb Food 5-9-6	1	1.67
Agrico Rose Food 5-9-6	2	1.71
Agrico for Cranberries 5-10-5	1	—
Agrico for Gardens 5-10-5	2	—
Agrico for Onions 5-10-5	3	—
Agrico for Truck 5-10-5	2	—
Agrico for Potatoes 5-10-10, 2% magnesium oxide	2	—
Agrico for Tobacco 6-3-6	2	2.42
Agrico for Turf 6-8-2	2	2.46
Agrico for Broadleaf Evergreens 6-10-4	1	.78
Agrico for Country Club 6-10-4	1	.47
Agrico for Lawns Trees & Shrubs 6-10-4	2	.51
Agrico for Top Dressing 7-7-7	4	—
Agrico for Country Club 8-6-4	1	1.68
Agrico for New England 8-12-12	3	—
Agrico for Cranberries 10-10-10	1	—
Agrico for Top Dressing 10-10-10	2	—
American Chemical Paint Co.		
Gro. Staff 20-20-20	1	—
Apothecaries Hall Co.		
Liberty 0-10-20	1	—
Liberty Tobacco Starter 5-5-15	1	—
Liberty High Grade Market Gardeners 5-8-7	2	—
Liberty 5-10-5	2	—
Liberty 5-10-10	2	—
Liberty Tobacco Mixture 6-3-6, 2% magnesium oxide	3	2.75
Liberty Super Bacco Tobacco 6-4-7, 2% magnesium oxide	2	2.92
Liberty Green Gro 6-7-4	1	1.24
Liberty 6-8-8, 2% magnesium oxide	2	—
Liberty Special for Fruit & Grass 7-7-7	2	—
Liberty 8-8-8	1	—
Liberty 8-16-16	1	—
Liberty 10-10-10	1	—

a Potash in forms other than muriate.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Armour Fertilizer Works		
Armour's Big Crop 5-8-7.....	1	—
Armour's Big Crop 5-10-5.....	1	—
Armour's Big Crop 5-10-10.....	1	—
Armour's Big Crop 5-10-10, 2% magnesium oxide.....	1	—
Armour's Big Crop 7-7-7.....	1	—
Armour's Big Crop 8-16-16.....	1	—
Armour's Gold Band Tobacco Grower 6-3-6.....	1 <i>b</i>	2.74
Armour's Vertagreen Plant Food 5-10-5.....	2	—
Armour's Vertagreen Plant Food for Commercial Crops 6-12-6..	1	—
Armour's Vertagreen Plant Food for Commercial Crops 6-12-12	1	—
Armour's Vertagreen Plant Food for Commercial Crops 8-8-8..	2	—
Armour's Vertagreen Plant for Professional Use 10-6-4.....	1	1.64
Atlas Fish Fertilizer Co.		
Atlas Fish Emulsion Fertilizer 5-1.3-1.5.....	1	—
F. A. Bartlett Tree Expert Co.		
Bartlett Green Tree Food 6-8-6.....	1	.76
Joseph Breck & Sons Corp.		
Breck's Garden-Gro 5-10-10, 2% magnesium oxide.....	1	—
Breck's Turf-Gro 8-6-2.....	1	1.51
Breck's Velturf 10-6-4.....	1	3.40
Breck's Quick-Life 16-32-16.....	1	—
California Spray-Chemical Corp.		
Ortho Lawn Groom 7-11-5.....	1	—
Ortho-Gro Liquid Plant Food 10-5-5.....	1	—
Carac Corp.		
Carac Rose Plant Fertilizer 22-18-22.....	1	—
Carac Balanced Lawn Fertilizer 30-10-14.....	1	—
Chesnicks Landscape Service		
Chesnicks Sod Builder 9-7-2.....	2	2.36
Clinton Nurseries		
New Era African Violet Food 5-12-9.....	1	1.57
New Era Vitamin Plant Food 7-15-8.....	1	—
Consolidated Rendering Co.		
Corenco 0-15-30.....	2	—
Corenco 0-20-20 Legume Special.....	2	—
Corenco 4-12-16 Ladino Special.....	1	—
Corenco Peerless Tobacco Grower 5-3-5.....	1 <i>a</i>	3.03
Corenco 5-8-7 Potato & General Crop.....	4	—
Corenco 5-10-5 Home Garden.....	2	—
Corenco 5-10-5 Onion Special—Super Truck.....	3	—
Corenco 5-10-5 Rose Special.....	1	—
Corenco Liquid Fertilizer Concentrate 5-10-10.....	1	—
Corenco 5-10-10 Peerless Potato.....	4	—

a Potash in forms other than muriate.

b Potash in forms other than muriate, 3.77%; potash as muriate, 2.33%.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Consolidated Rendering Co.—Cont.		
Corenco 5-10-10, 2% water soluble magnesium oxide.....	3	—
Corenco 6-3-6 Perfection Tobacco Grower.....	2 a	3.56
Corenco 6-3-6 Premium Tobacco Grower.....	1 a	2.75
Corenco 6-8-8 Potato Special.....	1	—
Corenco 7-7-7 Complete Fruit & Top Dressing.....	2	—
Corenco 8-6-4 Landscape.....	2	1.70
Corenco 8-6-4 Turf Green.....	2	2.90
Corenco 8-16-16 Two-in-One.....	1 c	—
Corenco Liquid Green 10-5-5.....	1	—
Corenco 10-6-4.....	1	.42
Corenco 10-10-10.....	2	—
Davison Chemical Co.		
0-15-30 Davco Granulated.....	1	—
5-10-5 Davco Turf & Garden Food (Premium).....	1	—
5-10-10 Davco Granulated.....	1	—
7-7-7 Davco Granulated.....	1	—
10-10-10 Davco Granulated.....	1	—
Doggett-Pfeil Co.		
D&P Carnation Food 3-12-3.....	1	1.54
XL 36 12-12-12.....	1	—
XL 60 15-30-15.....	1	—
E. I. du Pont de Nemours & Co.		
Du Pont Soluble Plant Food 19-22-16.....	1	—
Eastern States Farmers' Exchange, Inc.		
Eastern States 0-15-30 with Boron 0.2%.....	2	—
Eastern States 0-25-25.....	2	—
Eastern States 5-10-10, 2% magnesium oxide.....	3	—
Eastern States 8-4-8 Tobacco, 2% magnesium oxide.....	2 a	2.69
Eastern States 8-12-12, 2% magnesium oxide.....	2	—
Eastern States 8-12-12 L. C., 2% magnesium oxide.....	1 c	—
Eastern States 8-16-16, 1% magnesium oxide.....	2 a	—
Eastern States 8-16-16, 1% magnesium oxide.....	4	—
Eastern States 10-10-10 1% magnesium oxide.....	2	—
Eastern States 10-10-10 SM, 2% magnesium oxide.....	2	—
Eastern States Starter 64 16-32-16.....	1	—
Essex County Cooperative Farming Association		
S-X Brand 5-8-7.....	1	—
S-X Brand, 5-10-10, 2% water soluble magnesium oxide.....	1	—
S-X Brand 7-7-7.....	1	—
Excell Laboratories, Inc.		
New Plant Life 2-1-2.....	1	—

a Potash in forms other than muriate.

c See table of "Mixtures showing a commercial shortage of \$1 or more per ton."

e Potash in forms other than muriate, 10.64%: potash as muriate, 2.36%.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Faesy & Besthoff, Inc.		
F & B Broadleaf High Organic 6-10-4.....	1	1.45
F & B Rose Food 8-10-4.....	1	2.54
Farm Bureau Association		
Farm Bureau 5-8-7, 2% magnesium oxide.....	1	—
Farm Bureau 5-10-10.....	1	—
Farm Bureau 5-10-10, 2% magnesium oxide.....	1	—
Farm Bureau 7-7-7, 2% magnesium oxide.....	1	—
Farm Bureau 8-6-2.....	1	1.56
Farm Bureau 8-16-16.....	1	—
Forward House Div., Olin Mathieson Chemical Corp.		
Plantrons 12-24-12.....	2	—
Frank's Market Garden		
For More Growth (F.M.G.) 1-1-1.....	1	1.48
Frost & Higgins Co.		
Frost & Higgins Tree Food 8-6-4.....	1	3.00
Garden Research Laboratories		
RX-15 15-30-15, .816% magnesium oxide.....	1	—
Garfield Williamson, Inc.		
Plantspur 4-4-2.....	1	3.51
Goulard & Olena, Inc.		
G&O Tomato Food 4-12-13.....	1	.64
G&O Mr. Strawberry Big 3-13-7.....	1	—
G&O Rhodo-Azalea Food 3-20-3.....	1	.92
G&O Prizegro 5-10-5.....	1	—
G&O Evergreen Tree, Shrub Food 9-7-4.....	1	1.45
C. L. Halvorson Tree Service		
Halvorson Tree Food 8-6-2.....	1	1.02
Heller Greenhouse Laboratories		
Heller-Gro 15-15-15.....	1	—
A. H. Hoffman, Inc.		
Hoffman Rose Food 5-10-5.....	1	—
Hydroponic Chemical Co., Inc.		
Hyponex Plant Food 7-6-19.....	1	—
Hy-Trous Corp.		
Hy-Trous 4-8-4.....	1	—
International Minerals & Chemical Corp.		
Fertilis Home Garden 5-10-5, 2% magnesium oxide.....	2	—
Fertilis 8-6-2, 1% water soluble magnesium oxide.....	1	1.72
International 0-10-20.....	2	—
International 4-12-16, 1% magnesium oxide.....	2	—
International 5-8-7, 1% magnesium oxide.....	2	—
International 5-10-5, 1% magnesium oxide.....	2	—

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
International Minerals & Chemical Corp.—Cont.		
International 5-10-10, 1% magnesium oxide.....	2	—
International Potato 5-10-10, 2% water soluble magnesium oxide.....	2	—
International 6-3-6, 2% magnesium oxide.....	1 a	2.65
International 6-12-12, 2% water soluble magnesium oxide.....	2	—
International 7-7-7, 1% magnesium oxide.....	2	—
International 8-16-16.....	2	—
International 10-10-10, 1% magnesium oxide.....	3	—
Kapco Div., Summers Fertilizer Co., Inc.		
Kapco Soluble Fertilizer 15-30-15.....	1	—
Lebanon Chemical Corp.		
Plant Food 5-10-5.....	1	—
Azelea Food 7-7-7.....	1	—
Rose Food 7-7-7.....	1	—
H-Organic 8-8-8.....	1	2.15
Lebanon 10-6-4.....	1	—
Lexington Gardens, Inc.		
Bu-T-Grow 3-6-3.....	1	—
John D. Lyon, Inc.		
Lyon Old New England 6-8-3.....	1	5.04
Monsanto Chemical Co.		
Folium 20-20-20.....	1	—
Nitrogen Div., Allied Chemical & Dye Corp.		
Arcadian 12-12-12 Granular Fertilizer.....	1	—
Old Deerfield Fertilizer Co., Inc.		
Old Deerfield 0-12-24.....	1	—
Old Deerfield 0-20-20.....	1	—
Old Deerfield 4-12-8.....	1	—
Old Deerfield 4-12-16.....	1	—
Old Deerfield 5-5-15 Tobacco Starter.....	1 a	1.77
Old Deerfield 5-8-7 All Crop Fertilizer.....	1	—
Old Deerfield 5-10-5 Trucker's Special.....	1	—
Old Deerfield 5-10-10 Potato.....	2	—
Old Deerfield 5-10-10, 2% magnesium oxide, potash other than muriate.....	2 a	—
Old Deerfield Complete Tobacco 6-3-6.....	1 a	3.41
Old Deerfield Tobacco 6-3-6, 2% magnesium oxide, with 1000 lbs. cottonseed meal.....	1 a	3.01
Old Deerfield Complete Tobacco 6-4-7.....	1 a	2.52
Old Deerfield 6-5-5 Lawnshrub.....	1	1.71
Old Deerfield 6-8-8 Special Potato.....	1	—
Old Deerfield 7-7-7 Grass Top Dressing.....	1	—
Old Deerfield Green Lawn 8-6-4.....	2	2.63
Old Deerfield 8-8-8.....	1	—
Old Deerfield 8-12-12, 2% magnesium oxide.....	1	—
Old Deerfield 8-16-16.....	1	—
Old Deerfield 10-6-4.....	1	.15
Old Deerfield 10-10-10.....	1	—

a Potash in forms other than muriate.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Old Fox Agricultural Sales, Inc.		
Old Fox Brand 4-16-20	1	—
Old Fox Brand 5-8-7	1	—
Old Fox Brand 5-8-10	1	—
Old Fox Brand Garden Food 5-10-5	1	—
Old Fox Brand 5-10-10	1	—
Old Fox Brand 5-10-10, 2% water soluble magnesium oxide	1	—
Old Fox Brand 7-7-7	1	—
Old Fox Brand Turf Food 8-6-2	1	1.14
Olds & Whipple, Inc.		
O & W 5-5-15 High Grade Tobacco Starter	1 f	—
O & W 5-8-7 Potato & General Purpose	1	—
O & W 5-10-5	1	—
O & W 5-10-10 Potato	1	—
O & W 5-10-10 Potato Fertilizer, 2% magnesium oxide	1	—
O & W 6-3-6 Blue Label Tobacco, potash derived from cotton hull ash	2 a	3.67
O & W 6-8-8 Special Potato	1	—
O & W 7-7-7 Top Dressing & Grass	1	—
Parks-Barnes, Inc.		
Black Magic Plant Food 2-3-2	1	2.19
Black Magic African Violet Blossom Booster 4-10-10	1	—
Black Magic Liquid Fertilizer 10-5-5	1	—
Penn Co.		
Ferti-Flora 3-3-3	1	—
Plant Products Corp.		
Plant Prod "20" 20-20-20	1	—
Plantabbs Corp.		
Plantabbs 11-15-20	1	—
Ra-Pid-Gro Corp.		
Ra-Pid-Gro 23-21-17	1	—
Rogers & Hubbard Co.		
Gro-Fast Evergreen Food 4-10-4	1	.95
Gro-Fast Plant Food 5-10-5	1	1.05
Gro-Fast Rose Food 7-10-5	1	1.78
Hubbard Dairy 0-10-20	1	—
Hubbard Alfalfa 0-20-20	1	—
Hubbard Vegetable 5-8-7	2	—
Hubbard Garden 5-10-5	1	—
Hubbard General Crop 5-10-10	1	—
Hubbard Hi-Organic 5-10-10	1	1.19
Hubbard General Crop 5-10-10, 2% magnesium oxide	1	—
Hubbard Tobacco Grower 6-3-6	2 a	3.44
Hubbard Hi-Organic 6-8-8	1	1.39
Hubbard Potato 6-8-8	1	—

a Potash in forms other than muriate.

f Potash in forms other than muriate, 14.17%: potash as muriate, 2.43%.

Mixtures Substantially Complying with Guarantees—Concluded

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Rogers & Hubbard Co.		
Hubbard Hi-Organic 6-12-12.....	1	.97
Hubbard Top Dressing 7-7-7.....	2	—
Hubbard Golf Course 8-6-2.....	1	1.63
Hubbard Hi Yield 8-12-12.....	1	—
Hubbard Double Strength 8-16-16.....	1	—
Hubbard Golf Course 10-6-4.....	1	2.28
Hubbard Hi-Top 10-10-10.....	2	—
Rose Manufacturing Co.		
Tri-Ogen Rose Food 5-10-5.....	1	—
O. M. Scott & Sons Co.		
Scotts Organic Fertilizer 5-2-3.....	1	2.78
Scotts Weed & Feed 7-11-5.....	1	2.49
Scotts Turf Builder 9-7-4.....	1	2.06
Sears, Roebuck & Co.		
Cross Country Bulb Food 4-12-8.....	1	1.36
Cross Country Rose Food 5-10-5.....	1	—
Cross Country Evergreen Food 10-6-4.....	1	.16
Cross Country Instant Tomato Food 15-30-15.....	1	—
Cross Country Instant Rose Food 20-20-20.....	1	—
Cross Country Wat-R-Mix Plant Food 20-20-20.....	1	—
Soil Builders International Corp.		
Glorion 4-8-8.....	1	.57
Stim-U-Plant Laboratories, Inc.		
Stim-U-Plant African Violet Food 5-8-7.....	1	—
Stim-U-Plant Plant Tablets 11-12-15.....	1	—
Swift & Co., Plant Food Div.		
Brimm 5-10-10.....	1	—
Red Steer 5-10-10.....	1	—
Vigoro Camellia & Azalea 5-10-10.....	1	—
Vigoro 6-10-4.....	1	.35
Vigoro Plus Chlordane 6-10-4.....	1	.33
Vigoro Complete Rose Food 6-10-4.....	1	1.79
Golden Vigoro 6-10-4.....	1	3.56
Instant Vigoro 19-28-14.....	1	—
Universal Chemical Co.		
Electra Plant Food 5-10-3.....	1	1.83
Valley Feed & Supply Co., Inc.		
Adorna 3-1-1.....	1	2.22
Winslow Nurseries, Inc.		
Winslow's All Purpose Green Valley Plant Food 5-10-5.....	1	—
Winslow's Green Valley High Organic Turf Food.....	1	1.39
F. H. Woodruff & Sons, Inc.		
Gro-Sod Lawn Food 10-6-4.....	1	2.08

NITROGEN COMPOUNDS

Manufacturer and Brand	Nitrogen	
	Found	Guaranteed
American Agricultural Chemical Co.		
Agri-nite.....	8.64	7.0
Agri-nite.....	8.90	8.25
American Cyanamid Co.		
Aero Cyanamid.....	21.01	21.0
Lawn and Garden Cyanamid.....	20.45	21.0
Aeropills, Ammonium Nitrate.....	33.74	33.5
Bonide Chemical Co.		
Quick-Green Concentrate Nitrogen for Lawns.....	46.58	46
Borden Co., Chemical Division		
Borden's "38".....	37.66 <i>a</i>	38
Carac Corp.		
Carac (Hycon).....	46.40	46
Chilean Nitrate Sales Corp.		
Chilean Nitrate of Soda—Champion Brand.....	16.08	16
	16.00	16
	16.22	16
	16.04	16
Consolidated Rendering Co.		
Sulphate of Ammonia.....	20.92	20.5
E. I. du Pont de Nemours & Co.		
Du Pont Nu Green Fertilizer Compound.....	45.48	45
Du Pont Uramite Fertilizer Compound.....	38.22 <i>b</i>	38
Eastern States Farmers' Exchange, Inc.		
Castor Pomace.....	6.10	5.5
Goulard & Olen, Inc.		
G&O Cottonseed Meal.....	6.77	6.7
G&O Nitrate of Soda.....	16.03	16.0
G&O Sulphate of Ammonia.....	21.08	20.75
Humphreys-Godwin Co.		
Dixie Brand 41% Cottonseed Meal.....	6.58	6.56
International Minerals & Chemical Corp.		
International Sulphate of Ammonia.....	20.84	20.5
Spencer Kellogg & Sons, Inc.		
Castor Pomace.....	5.70	5.5
McKesson & Robbins		
Calcium Nitrate.....	15.71	15.5
Nitrogen Division, Allied Chemical & Dye Corp.		
Arcadian Urea Fertilizer Compound.....	45.86	45
Old Deerfield Fertilizer Co., Inc.		
Old Deerfield Sulphate of Ammonia.....	20.73	20.5
Old Fox Agricultural Sales, Inc.		
Old Fox Organo.....	5.42 <i>c</i>	5.0
Sears, Roebuck & Co.		
Cross Country Sulphate of Ammonia.....	21.23	20.5

a Water insoluble nitrogen found, 24.79%.*b* Water insoluble nitrogen found, 26.74%.*c* Water insoluble nitrogen found, 3.86%.

PRODUCTS SUPPLYING ORGANIC NITROGEN AND PHOSPHORIC ACID

Manufacturer and Brand	Total Nitrogen Found	Total Phosphoric Acid		Available Phosphoric Acid	
		Found	Guaran- teed	Found	Guaran- teed
Agricultural Products					
Apco Bone Meal 2-25-20	2.22	29.20	20.0		
American Agricultural Chemical Co.					
Bone Meal 1.5-25	2.40	26.80	25.0		
Armour Fertilizer Works					
All Organic 5-5	5.55	5.85		5.09	5.0
Bone Meal 2.3-23	2.98	26.50	23.0		
H. J. Baker & Bro.					
Nitrogenic 5-4	5.00	4.80		4.28	4.0
Joseph Breck & Sons Corp.					
Greensite 5-4	5.16			4.80	4.0
Consolidated Rendering Co.					
Corenco Ground Bone 2-22	2.70	26.00	22.0		
Corenco Organic Turf Fertilizer 4.75-4	5.48			4.85	4.0
Faesy & Besthoff, Inc.					
F&B Pure Bone Meal 2.47-23	2.05	28.00	23.0		
Goulard & Olena, Inc.					
G&O Ground Bone 2.4-20	2.72	25.55	20.0		
A. H. Hoffman, Inc.					
Hoffman's Bone Meal 3.7-18.5	4.19	21.80	18.5		
International Minerals & Chemical Corp.					
International Bone Meal 2.47-23	2.77	26.80	23.0		
International Mello Green 5-4	5.24	5.75		5.09	4.0
Lebanon Chemical Corp.					
Turf-Organic 5-4	4.83			4.00	4.0
Old Deerfield Fertilizer Co., Inc.					
Fine Ground Bone 2-23	2.34	28.25	23.0		
Dry Ground Fish 9-5	10.17	6.70	5.0		
Tru-Organic Lawn Fertilizer 5-4	5.00			5.00	4.0
John Reardon & Sons					
Reaco Ground Bone 2.47-22.88	5.62	19.00	22.88		
Rogers & Hubbard Co.					
Gro-Fast Bone Meal 2-23	2.43	27.40	23.0		
Sears, Roebuck & Co.					
Cross Country Bone Meal 2-23	2.37	29.30	23.0		
Cross Country Lawn Food 5-4	5.97			4.30	4.0
Sewerage Commission of the City of Milwaukee					
Milorganite 5.5-4	{ 5.74 5.48	4.50		4.02 4.50	4.0 4.0

PHOSPHORIC ACID COMPOUNDS

Manufacturer and Brand	Total Phosphoric Acid	Available Phosphoric Acid	
		Found	Guaranteed
American Agricultural Chemical Co.			
Ground Limestone Rock	31.00 ^a	—	—
18% Normal Superphosphate	{ —	18.15	18
		18.00	18
Armour Fertilizer Works			
Big Crop Superphosphate 20%	—	20.10	20
Consolidated Rendering Co.			
Corenco Superphosphate 20%	{ —	21.30	20
		21.60	20
		20.45	20
Davison Chemical Co.			
Davco Granulated Superphosphate 20%	—	20.85	20
Eastern States Farmers' Exchange, Inc.			
Superphosphate 20%	—	20.65	20
Farm Bureau Association			
Superphosphate 20%	—	20.35	20
International Minerals & Chemical Corp.			
International Superphosphate 20%	{ —	21.60	20
		20.50	20
Old Deerfield Fertilizer Co., Inc.			
Old Deerfield Superphosphate 20%	—	20.10	20
Rogers & Hubbard Co.			
Hubbard's Superphosphate 20%	—	20.50	20

Brands Seriously Deficient

Goulard & Olena, Inc.			
G&O Superphosphate 20%	19.95	18.45	20

^a Guaranteed 30% total phosphoric acid.

POTASH COMPOUNDS

Manufacturer and Brand	Water Soluble Potash	
	Found	Guaranteed
Consolidated Rendering Co.		
Muriate of Potash	62.24	60.0
Eastern States Farmers' Exchange		
Muriate of Potash	62.24	60.0
Goulard & Olena, Inc.		
G&O Muriate of Potash	60.64	60.0
International Minerals & Chemical Corp.		
Muriate of Potash	{ 60.40	60.0
	60.40	60.0
Old Deerfield Fertilizer Co., Inc.		
Muriate of Potash	60.80	60.0
Old Fox Agricultural Sales, Inc.		
Muriate of Potash	60.80	60.0
Rogers & Hubbard Co.		
Hubbard's Muriate of Potash	62.08	20.0

PULVERIZED ANIMAL MANURES

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Organic Matter	Acid Insoluble Ash (Sand)	Microscopic Examination
Agricultural Products Sheep Manure (1.5-3-2.25)	1.77	60	3.17	50.0	32.1	Mislabeled. Mixture of wool combings (including dead ticks and lice), crab meal, and sand.
American Agricultural Chemical Co. Sheep Manure (1.25-1-2)	1.55	1.75	4.50	43.0	33.7	Mislabeled. Mixture of sheep manure, poultry litter, and sand.
Armour Fertilizer Works Cattle Manure (1.85-1.75-1.75) Sheep Manure (1.25-1-2)	1.79 1.34	99 1.81	2.37 4.56	63.9 37.7	24.7 38.3	As represented. Mislabeled. Mixture of sheep manure and sand
Atkins & Durbrow, Inc. Droppings (3-2-4)	2.90	6.15	3.65	69.6	4.3	As represented.
Chicago Stock Yards Compost Co. Fertilizer Organic Compost (1.75-1.5-1.25)	1.85	1.75	2.95	40.8	13.7	As represented. Livestock manure
Coastal Dry-Manure Corp. CD Organic Dry-Manure (1-1-1)	.96	1.20	1.10	32.4	59.3	Mislabeled. Mixture of manure and sand. Removed from sale.
Consolidated Rendering Co. Coreneo Spurz-on (3-2.5-1.5) Coreneo Sheep Manure (1.25-1-2)	3.45 1.26	3.98 1.67	2.73 3.81	65.5 35.1	6.5 42.3	As represented. Poultry manure. Mislabeled. Mixture of sheep manure and sand.
Garden Supply Laboratories Corp. Farmmanure (2-1-1)	3.31	3.20	2.30	69.0	16.0	As represented. Poultry manure.
Gouldard & Olena, Inc. G&O Cattle Manure 1.85-1.75-1.75	2.21	1.45	1.76		30.7	As represented.
A. H. Hoffman, Inc. Cow Manure (2-1-1)	12.23 2.56 1.85	1.22 1.39 10.70	2.76 2.85 1.99	85.1 84.3 52.0	1.9 2.0 11.2	As represented. As represented. Mislabeled. Mixture containing muriate of potash, rock phosphate, superphosphate and cow manure.

PULVERIZED ANIMAL MANURES—Concluded

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Organic Matter	Acid Insoluble Ash (Sand)	Microscopic Examination
A. H. Hoffman, Inc.,—Cont. Sheep Manure (1.25-1.2)	{ 1.44 1.28 1.40	{ 1.84 1.68 1.70	{ 5.22 4.71 4.32	{ 49.1 50.6 40.1	{ 33.5 38.3 39.7	Mislabeled. Mixture of cow manure and sand. Mislabeled. Mixture of sheep manure, cow manure, and sand. Mislabeled. Mixture of sheep manure and sand.
Lebanon Chemical Corp. Cow Manure (1.5-1.2) Sheep Manure (1.5-1.2)	{ 1.90 1.95	{ 1.10 1.30	{ 2.74 3.10	{ 45.1 45.9	{ 37.2 40.3	Mislabeled. Mixture of cow manure and sand. Mislabeled. Mixture of cow manure and sand.
Natural Plant Food Co. Longhorn Brand Cattle Manure (2-1-2) Ramshorn Brand Sheep Manure (2-1-2)	{ 2.00 2.42	{ 1.05 1.10	{ 2.81 2.18	{ 67.0 64.1	{ 19.1 22.5	As represented. Mislabeled. Cow manure.
Rogers & Hubbard Co. Cow Manure (2-1-1) Sheep Manure (1.25-1.2)	{ 2.09 2.19 1.32 1.32	{ 1.44 1.30 1.00 1.00	{ 2.88 2.71 3.81 2.74	{ 83.4 84.1 37.9 32.7	{ 2.2 2.6 33.2 33.1	As represented. As represented. Mislabeled. Mixture of sheep manure and sand. Mislabeled. Mixture of sheep manure and sand.
Sears, Roebuck & Co. Cross Country Cattle Manure (1.5-.75-2) Cross Country Cattle Manure (1.5-1-2) Cross Country Sheep Manure (1.5-.75-2)	{ 1.83 2.00 2.35	{ .75 1.00 .87 1.00	{ 1.60 3.10 3.51 3.60	{ — 51.7 52.0 63.2	{ 32.3 30.4 23.3 16.0	Mislabeled. Mixture of sand, manure, cottonseed hulls, and limestone. Mislabeled. Mixture of cattle manure and sand. Mislabeled. Mixture of cow manure and poultry litter. Mislabeled. Mixture of sheep and cow manure.
Thomson Nursery Cow Manure (.5-.25-.2)	.39	.29	.30	16.3	2.4	As represented. (Moisture 75.7%)
Triple A Mills Sure Gro Poultry Manure (3.25-2.5-1.5)	{ 3.46 3.25	{ 4.10 4.20	{ 2.50 2.66	{ 70.1 78.3	{ 3.2 2.8	As represented. As represented.
Walker-Gordon Laboratory Co. Bovung (2-1-1)	{ 2.37 2.02	{ 1.50 1.60	{ 2.83 2.88	{ 86.2 85.5	{ 2.0 2.3	As represented. As represented.

AGRICULTURAL LIME PRODUCTS

Manufacturer and Brand	Calcium Oxide (CaO)		Magnesium Oxide (MgO)		Neutralizing Value Expressed in Terms of Calcium Oxide		Insoluble Matter	Mechanical Analysis (Per Cent)	
	Found	Guaranteed	Found	Guaranteed	Pct. Cent	Pounds in One Ton		Finer than 100-mesh	Coarser than 20-mesh
Adams Hydrate Co., Inc. Fertility Hydrated Land Lime	65.0	60	6	5	60.3	1,206	2.9	—	—
	64.6	60	5	.5	61.3	1,226	3.2	—	—
Conklin Limestone Co., Inc., Lincoln, R. I. Lawn & Garden Limestone	39.6	34	11.0	1.5	52.1	1,042	9.9	57.4	9
Conklin Limestone Co., Inc., Canaan, Conn. High Magnesium Agricultural Ground Limestone	30.1	30	19.0	18.0	54.3	1,086	8.9	52.9	1.2
Thomas J. Grey Co., Dry Littlefield-Wyman Nurseries, Inc. "Gardener's Green" Brand Limestone	42.7	34	6.4	1.5	39.3	986	10.0	52.0	1.4
A. H. Hoffman, Inc. Hoffman Hydrated Lime	70.6	60	1.0	1.0	50.7	1,414	2.1	—	—
Lee Lime Corp. Lee ABC Hydrate—General Purpose	49.0	45	31.8	30.0	90.9	1,818	1.0	—	—
	43.9	45	29.8	30.0	82.6	1,652	.8	—	—
Lee Double Strength Agricultural Hydrated Lime	48.4	43	33.7	30.0	99.6	1,852	.4	—	—
Lee Lawn & Garden Lime	43.2	38	6.4	5.0	50.9	1,015	9.7	—	—
	38.5	38	6.4	5.0	42.8	856	23.3	—	—
Lee Pulverized Limestone	30.8	30	21.8	20.0	59.4	1,188	1.1	56.9	5
	32.8	30	20.0	20.0	58.8	1,176	.9	49.8	1.4
Lee Pulverized Limestone West Stockbridge Lee Spray Lime	40.7	38	7.9	5.0	50.5	1,010	11.5	90.3	1
	42.7	45	31.5	30.0	84.0	1,680	.2	—	—
Tobey Agra Hydrate	39.4	35	27.6	25.0	75.1	1,502	1.7	—	—
	40.9	35	26.5	25.0	75.5	1,510	1.0	—	—

AGRICULTURAL LIME PRODUCTS—Concluded

Manufacturer and Brand	Calcium Oxide (CaO)		Magnesium Oxide (MgO)		Neutralizing Value Expressed in Terms of Calcium Oxide		Insoluble Matter	Mechanical Analysis (Per Cent)	
	Found	Guaranteed	Found	Guaranteed	Per Cent	Pounds in One Ton		Finer than 100-mesh	Coarser than 20-mesh
New England Lime Co.									
Nelco Agricultural Hydrated Lime (Adams).....	74.2	70	.8	.5	73.6	1,472	2	—	—
Nelco Agricultural Hydrated Lime (Canaan, Conn.).....	49.5	47	31.3	31.0	90.5	1,810	5	—	—
Nelco Agricultural Ground Limestone (Canaan, Conn.).....	32.4	30	20.6	21.0	58.8	1,176	2.2	70.9	4
Nelco Land Lime (Canaan, Conn.).....	40.9	35	25.8	25.0	74.7	1,494	1.6	—	—
Ohio Lime Co.									
Ohio Hydrated Lime.....	46.8	46.95	32.4	33.98	88.6	1,772	3	—	—
Rogers & Hubbard Co.									
Gro Fast Hydrated Lime.....	43.0	40	30.8	25.0	83.0	1,660	none	—	—
O. M. Scott & Sons Co.									
Scotts Soil Improver (a).....	31.3	14	9.4	9.24	24.8	496	10.4	—	—
United States Gypsum Co.									
Red Top General Purpose Hydrated Lime (Farnams).....	74.2	70	1.1	trace	73.6	1,472	5	—	—
Red Top Hydrated Agricultural Lime.....	72.4	70	2.4	trace	73.6	1,472	3	—	—
USG Agricultural Limestone (Falls Village).....	30.4	30	18.3	20.0	53.3	1,066	10.0	55.0	7.0
	31.5	30	21.1	20.0	59.1	1,182	1.1	46.9	.3
USG Agricultural Limestone (Farnams)									
	54.7	50.5	1.0	.25	54.4	1,088	2.8	—	—
	54.4	50.5	.8	.25	54.1	1,082	5.1	—	—
USG Cheshire Land Lime.....									
	63.7	60	1.1	.25	63.1	1,262	3.9	—	—
USG Kemical Land Lime.....	65.2	60	1.4	.25	65.5	1,310	1.9	—	—
Woodville Lime Products Co.									
Tenlime.....	46.8	33.5	33.7	20.5	91.7	1,834	.7	—	—

a A mixture of limestone and gypsum (calcium sulfate). Calcium sulfate found, 53.4%.

DIRECTORY OF MANUFACTURERS WHO REGISTERED FERTILIZERS FOR SALE IN MASSACHUSETTS IN 1956

- Agricultural Products, West Kingston, R. I.
 Alaska Fertilizer Co., 84 Seneca St., Seattle 1, Wash.
 American Agricultural Chemical Co., 285 River St., North Weymouth, Mass.
 American Chemical Paint Co., Ambler, Penn.
 American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.
 American Liquid Fertilizer Co., Inc., 2nd St. at St. Clair, Marietta, Ohio
 Apothecaries Hall Co., 28 Benedict St., Waterbury, Conn.
 Archer-Daniels-Midland Co., Minneapolis 2, Minn.
 Armour Fertilizer Works, Carteret, N. J.
 Associated Seed Growers, Inc., Asgrow Home Garden Div., Main St., Cambridge, N. Y.
 Atkins & Durbrow, Inc., Port Colborne, Ont., Canada
 Atlas Fish Fertilizer Co., 1 Drumm St., San Francisco 11, Cal.

 H. J. Baker & Bro., 600 Fifth Ave., New York 20, N. Y.
 F. A. Bartlett Tree Expert Co., 60 Canal St., Stamford, Conn.
 Baugh & Sons Co., Inc., Coxsackie, N. Y.
 Better Homes Bureau, 165 East Union St., Newark, N. Y.
 Bonide Chemical Co., 382 North Genesee St., Utica 4, N. Y.
 Beiden Co., Chemical Div., 350 Madison Ave., New York 17, N. Y.
 Joseph Breck & Sons Corp., 401 Summer St., Boston 10, Mass.
 Buell Fertilizer Co., Exeter, N. H.

 California Spray-Chemical Corp., Lucas and Ortho Way, Richmond, Cal.
 Carac Corp., 162 Babylon Turnpike, Freeport, N. Y.
 Carbola Chemical Co., Inc., Natural Bridge, N. Y.
 Chesnicka Landscape Service, 47 Broad St., Westfield, Mass.
 Chicago Stock Yards Compost Co., 503 Exchange Bldg., Chicago 9, Ill.
 Chilean Nitrate Sales Corp., 120 Broadway, New York 5, N. Y.
 Clinton Nurseries, Clinton, Conn.
 Coastal Dry-Manure Corp., Dagsboro, Del.
 Cocke & Co., 208 William-Oliver Bldg., Atlanta 3, Ga.
 Consolidated Rendering Co., 178 Atlantic Ave., Boston 10, Mass.

 Davey Tree Expert Co., 117 South Water St., Kent, Ohio
 Davison Chemical Co., Div. of W. R. Grace & Co., 101 North Charles St., Baltimore 3, Md.
 Doggett-Pfeil Co., 681 Morris Turnpike, Springfield, N. J.
 E. I. du Pont de Nemours & Co., Wilmington, Del.

 Eastern States Farmers' Exchange, Inc., 26 Central St., West Springfield, Mass.
 Essex County Cooperative Farming Association, 144 South Main St., Topsfield, Mass.
 Excell Laboratories, Inc., 2732 Indiana Ave., Chicago, Ill.

 Faesy & Besthoff, Inc., 325 Spring St., New York 13, N. Y.
 Farm Bureau Association, 155 Lexington St., Waltham 54, Mass.
 Fertiline Corp. of America, 251 Central Park West, New York, N. Y.
 Fiestar, Inc., 665 Fifth Ave., New York 22, N. Y.
 Forward House Div., Olin Mathieson Chemical Corp., 745 Fifth Ave., New York 22, N. Y.
 Frank's Market Garden, 1398 Allen St., Springfield, Mass.
 Frost & Higgins Co., 20 Mill St., Arlington 74, Mass.

 Garden Research Laboratories, 18 East 41 St., New York 17, N. Y.
 Garden Supply Sales Corp., 2120 Lake Ave., Rahway, N. J.
 Garfield Williamson, Inc., 1072 Westside Ave., Jersey City 16, N. J.
 Goulard & Olena, Inc., Skillman, N. J.
 Grace Chemical Co., Div. of W. R. Grace & Co., Memphis, Tenn.
 Grant Co., 2735 North Ashland Ave., Chicago 14, Ill.
 Thomas J. Grey Co., Div. of Littlefield-Wyman Nurseries, Inc., 227 Centre Ave., Abington, Mass.

C. L. Halvorson Tree Service, 150 North St., Pittsfield, Mass.
Heller Greenhouse Laboratories, 218 East Pikes Peak Ave., Colorado Springs, Col.
A. H. Hoffman, Inc., Landisville, Penn.
Humphreys-Godwin Co., 2246 Park Ave., Memphis, Tenn.
Hydroponic Chemical Co., Inc., Copley, Ohio
Hy-Trous Corp., 50 Cross St., Winchester, Mass.

Independence Hall Seed Co., 2700 Wilmarco Ave., Baltimore 23, Md.
International Minerals & Chemical Corp., Woburn, Mass.
International Minerals & Chemical Corp., 20 North Wacker Drive, Chicago 6, Ill.

Kapco Div., Summers Fertilizer Co., Inc., 603 Walnut St., McKeesport, Penn.
Spencer Kellogg & Sons, Inc., 98 Delaware Ave., Buffalo 2, N. Y.

Lawn-Tex, Inc., 1640 West Fulton St., Chicago, Ill.
Lebanon Chemical Corp., Lebanon, Penn.
Lee Patten Seed Co., 360 Ninth St., Jersey City 2, N. J.
Lexington Gardens, Inc., 93 Hancock St., Lexington, Mass.
Loamium Company of America, 2 Kingsland Ave., Harrison, N. J.
Loncala Phosphate Co., High Springs, Florida
L. B. Lovitt & Co., 314 Cotton Exchange Bldg., Memphis, Tenn.
John D. Lyon, Inc., 143 Alewife Brook Pkwy., Cambridge 40, Mass.

McKesson & Robbins, Inc., 79 Milk St., Boston 9, Mass.
Mamlon Co., 1089 Whalley Ave., New Haven 15, Conn.
Olin Mathieson Chemical Corp., 10 Light St., Baltimore, Md.
Monsanto Chemical Co., 1700 South Second St., St. Louis 4, Mo.

'Na-Churs' Plant Food Co., 421 Munroe St., Marion, Ohio
Natural Plant Food Co., 210 West California St., Oklahoma City 2, Okla.
Nitro-form Agricultural Chemicals Div., Woonsocket Color & Chemical Co., Inc.,
175 & 92 Sunnyside Ave., Woonsocket, R. I.
Nitrogen Div., Allied Chemical & Dye Corp., Hopewell, Va.

Old Deerfield Fertilizer Co., Inc., South Deerfield, Mass.
Old Fox Agricultural Sales, Inc., 49 Valley St., East Providence, R. I.
Olds & Whipple, Inc., 168 State St., Hartford, Conn.

Parks-Barnes, Inc., 530-6th St., Hermosa Beach, Cal.
Pedigreed Seed Co., 96 Forrest St., Jersey City 5, N. J.
Penn Co., 39 Deering Road, Dorchester, Mass.
Plant Magic Products, Inc., 40 Highland Ave., Seekonk, Mass.
Plant Products Corp., Kennedy Ave., Blue Points, L. I., N. Y.
Plantabbs Corp., 1105 Maryland Ave., Baltimore 1, Md.
Premier Peat Moss Corp., 535 Fifth Ave., New York 17, N. Y.
Proen Products Co., 9th & Grayson Sts., Berkeley 10, Cal.

Ra-Pid-Gro Corp., 88 Ossian St., Dansville, N. Y.
John Reardon & Sons, Div. of Wilson & Co., Inc., 51 Waverly St., Cambridge 39, Mass.
Rogers & Hubbard Co., Portland, Conn.
Rose Manufacturing Co., 445 Main St., Beacon, N. Y.
Ruhm Phosphate & Chemical Co., Columbia, Tenn.

St. Louis National Stockyards Co., Exchange Bldg., National Stock Yards, Ill.
O. M. Scott & Sons Co., Marysville, Ohio
Sears, Roebuck & Co., 925 South Homan Ave., Chicago 7, Ill.
Sewerage Commission of the City of Milwaukee, Milwaukee 1, Wis.
Smith Agricultural Chemical Co., 618 North Champion Ave., Columbus 16, Ohio
Sohio Chemical Co., Ft. Amanda Rd., Lima, Ohio
Soil Builders International Corp., 33 West 42nd St., New York 36, N. Y.
Soil Saver Service, Pawlet, Vt.
Stearn's Garden Products, Inc., 404 William St., Geneva, N. Y.
Stimuplant Laboratories Co., 2077 Parkwood Ave., Columbus 19, Ohio
Swift & Co., Plant Food Div., Hartford 1, Conn.

Tennessee Corp., 617-27 Grant Bldg., Atlanta, Ga.

Thomson Nursery, Danvers, Mass.

Triple A Mills, Townsend Harbor, Mass.

Universal Chemical Co., 52 Oakville St., Lynn, Mass.

Valley Feed & Supply Co., Inc., Union Road, Spring Valley, N. Y.

Virilium Corp., Broad St., Medway, Mass.

Walker-Gordon Laboratory Co., Plainsboro, N. J.

Winslow Nurseries, Inc., Needham, Mass.

F. H. Woodruff & Sons, Inc., Milford, Conn.

DIRECTORY OF MANUFACTURERS WHO REGISTERED AGRICULTURAL LIME PRODUCTS FOR SALE IN MASSACHUSETTS IN 1956

Adams Hydrate Co., Inc., 177 Milk St., Boston

Basic Dolomite, Agricultural Div. of Basic Refractories, Inc., 845 Hanna Bldg., Cleveland 15, Ohio

Conklin Limestone Co., Inc., R.F.D., Saylesville, R. I.

Thomas J. Grey Co., Div. of Littlefield-Wyman Nurseries, Inc., 227 Centre Ave., Abington, Mass.

Morton A. Grossman, 156 Valley St., East Providence, R. I.

A. H. Hoffman, Inc., Landisville, Penn.

Lee Lime Corp., Lee, Mass.

Limestone Products Corp. of America, 122 Main St., Newton, N. J.

New England Lime Co., Adams, Mass.

Ohio Lime Co., Main St., Woodville, Ohio

Rogers & Hubbard Co., Portland, Conn.

O. M. Scott & Sons Co., Marysville, Ohio

United States Gypsum Co., 300 West Adams St., Chicago 6, Ill.

Woodville Lime Products Co., Toledo 2, Ohio



Seed Inspection

BY

Seed Control Service Staff

Massachusetts Agricultural Experiment Station

— June 14, 1957 —



This report, the twenty-ninth in seed control service, is a record of work delegated to the Massachusetts Agricultural Experiment Station during 1956 by authority of Chapter 94 as amended by Chapter 377 of the Acts of 1946.

LABORATORY REGULATIONS AND FEES FOR TESTING SEED

The following regulations and fees have been approved by the Director of the Massachusetts Agricultural Experiment Station.

FIELD CROPS:

KIND OF SEED	PURITY	GERMINATION	PURITY AND
	ONLY	ONLY	GERMINATION
Alfalfa, Rape, Ryegrasses, Soybeans, Timothy.....	\$1.00	\$0.50	\$1.25
Cereals, Buckwheat, Sudan Grass, Vetches.....	1.25	.50	1.50
Clovers, Fescues, Reed Canary Grass.....	1.00	.50	1.50
Brome Grass, Millets.....	1.50	.50	2.00
Bentgrasses, Bluegrasses, Orchard Grass, Redtop...	2.00	.50	2.25
Redtop (Unhulled).....	2.50	.50	2.75

Mixtures: Lawn, Pasture, Mowing, etc.

Purity only.....\$2.50

Germination only..... .50 for each component

Purity and Germination..... 2.50 + .50 for each component

Special Mixtures: Consisting of two kinds of cereals, two kinds of clover only, or Timothy and one kind of clover

Purity only..... \$1.25

Germination only..... .50 for each component

Purity and Germination..... 2.00

Vegetables: Germination tests for all kinds of vegetable seeds, 30 cents each.

Cleaning Tobacco Seed: For each lot of one pound or less, based on the weight of seed as received for cleaning, 50 cents.

Kinds of Seed Not Listed: Fees for testing and for other seed determinations not listed will be based on the time consumed in making the test or for other service requested.

Free Tests: During any one calendar year, the Seed Testing Laboratory will allow two free tests of vegetable or tobacco seed to any person residing or doing business in the Commonwealth.

The minimum weights of samples to be submitted for analysis are:

- Two ounces of grass seed, white or alsike clover, or seeds not larger than these.
- Five ounces of red or crimson clover, alfalfa, ryegrasses, millet, rape, or seeds of similar size.
- One pound of cereal, vetches, or seeds of similar or larger size.

The minimum number of seeds of any kind to be submitted for a germination test is 400.

Samples should be taken so as to represent correctly the lot sampled, each placed in a strong container, the parcel of samples securely wrapped and addressed to Seed Laboratory, Agricultural Experiment Station, Amherst, Mass.

Checks or Money Orders must be made payable to the University of Massachusetts and sent to the Seed Laboratory.

In no case will the final report for work done be rendered until all fees are paid.

Massachusetts Vegetable Seed Standards

The amended seed law requires in Section 261 I that the Director of the Massachusetts Agricultural Experiment Station shall, after reasonable notice and hearing and with the approval of the Commissioner of Agriculture, adopt vegetable seed germination standards, prescribe rules and regulations, and in like manner modify or amend rules and regulations governing the methods of sampling, inspecting, analyzing, testing, and examining agricultural, vegetable and flower seeds and the tolerances to be followed in administration.

A hearing for the above stated purpose was held in Horticultural Hall, Worcester, Massachusetts, at 3 P. M., October 18, 1946. The following set of standards was so approved and adopted:

KIND OF SEED	GERMINATION STANDARD %	KIND OF SEED	GERMINATION STANDARD %
Artichoke (<i>Cynara Scolymus</i>)....	60	Kale.....	75
Asparagus.....	70*	Kohlrabi.....	75
Bean, Lima.....	70	Leek.....	60
Bean, Scarlet Runner.....	75	Lettuce.....	80
Bean, Other Varieties.....	75	Muskmelon.....	75
Beet.....	65	Mustard.....	75
Broccoli.....	75	Okra.....	50*
Brussels Sprouts.....	70	Onion.....	70
Cabbage.....	75	Parsley.....	60
Cabbage, Chinese.....	75	Parsnip.....	60
Carrot.....	55	Peas.....	80
Cauliflower.....	75	Pepper.....	55
Celeriac.....	55	Pumpkin.....	75
Celery.....	55	Radish.....	75
Chard, Swiss.....	65	Rhubarb.....	60
Chicory.....	65	Rutabaga.....	75
Citron.....	65	Salsify.....	75
Collard.....	80	Sorrel.....	60
Corn, Sweet.....	75	Soybean.....	75
Cress, Garden or Curled.....	40	Spinach, Common.....	60
Cress, Water.....	35	Spinach, New Zealand.....	40
Cucumber.....	80	Squash.....	75
Dandelion.....	45	Tomato.....	75
Egg Plant.....	60	Tomato, Husk.....	50
Endive.....	70	Turnip.....	80
Fetticus (Corn Salad).....	70	Watermelon.....	70

*Including Hard Seeds. However, the percentage of germination, exclusive of hard seeds and the percentage of hard seed, if present, must be stated.

SEED TESTING FOR THE SEASON OF 1956

By Seed Control Service Staff

Wendell P. Dittmer, *Assistant Research Professor*
In Charge of Seed Laboratory

Jessie L. Anderson, *Assistant Research Professor*
Waldo C. Lincoln, Jr., *Research Instructor*
A. W. Clapp, *State Inspector*¹
Paul W. Brown, *State Inspector*¹

Paul Korpita, *Laboratory Assistant*
Leon Stowell, *Laboratory Helper*
May J. Honnay, *Senior Clerk*

From November 1, 1955, to November 1, 1956, the Seed Laboratory received 4866 samples of seed, of which 1323 were collected by the State Department of Agriculture and 3543 were sent in by seedsmen, farmers, and various State institutions.

Classification of the samples for which tests were completed, with the total number of laboratory tests involved, is listed in the following summary:

NUMBER OF SAMPLES	NUMBER OF TESTS	
	PURITY	GERMINATION
287 Field Crops for Purity and Germination	287	287
384 Field Crops for Germination .....	....	384
2 Field Crops for Purity	2	....
160 Lawn Mixtures and Other Types of Mixtures, for Purity; Germinations involving 711 ingredients	160	711
81 Lawn Mixtures for Germination; Germinations in- volving 332 ingredients .....	....	332
21 Lawn Mixtures for Purity	21	....
3480 Vegetable Samples .....	....	3480
11 Tree Seed Samples .....	....	11
47 Tobacco Seed Samples .....	....	47
393 Flower Seed Samples .....	....	393
4866	389	5645

Field tests to determine trueness to type consisted of 175 samples of vegetable seed and 352 samples of flower seeds, respectively.

The Seed Laboratory cleaned 28 lots of tobacco seed samples for Connecticut Valley farmers. The gross weight of the tobacco seed samples was 24.75 pounds, and the net weight for the cleaned seed was 19.75 pounds.

¹Employed by the State Department of Agriculture.

Explanation of Tables

Tables 1 through 5 consist of data in conformity with requirements of the Seed Law defined by Chapter 94 as amended by Chapter 377 of the Acts of 1946:

- Table 1. Results of Inspection and Analyses of Field Seeds as defined under Sections 261 B1 and 261 C.
- Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds as defined under Sections 261 B1 and 261 C.
- Table 3. Results of Inspection and Germination of Vegetable Seeds as defined under Sections 261 B2 and 261 C.
- Table 4. Field Tests of Vegetable Seeds, Type and Variety Studies, as defined under Sections 261 H.
- Table 5. Studies of Flower Seeds, Laboratory and Field Tests to Determine Quality, as defined under Sections 261 H.
- Table 6. Summary, by Wholesalers, of the Performance of Flower Seeds in the Field.
- Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory. This table lists the number of samples correctly labeled or mislabeled.

All samples were taken by inspectors from the State Department of Agriculture and were tested at the Seed Laboratory according to the Rules for Seed Testing adopted by the Association of Official Seed Analysts.

Within each table the wholesalers are listed in alphabetical order, and the various kinds of seeds sold by them follow the same alphabetical arrangement. Mislabeling and other irregularities are emphasized by boldface type and explained in the final column of the table. The number preceding each analysis is for identification and reference. The line to the right of the letter "L" gives information copied from the label; that to the right of "F," what was found in the laboratory analysis.

Results of Inspection and Analyses of Field Seeds—Sections 261 B1 and 261 C.

Each lot of Agricultural Seeds except Barley, Buckwheat, Oats, Rye, and Wheat must be labeled to show the commonly accepted name and variety. When the variety is unknown, the label shall bear the statement: "Variety Unknown." The label must also show lot number or other identification; percentage, by weight, of pure seed; percentage, by weight, of inert matter; percentage, by weight, of weed seeds; percentage, by weight, of other agricultural seeds; percentage of (a) germination, exclusive of hard seeds; (b) hard seeds, if present; month and year germination test was completed; origin of Alfalfa, Red Clover, and Field Corn (other than Hybrid)—if origin is unknown, it must be so stated; name and address of the person who labeled the seed, or who sells, offers, or exposes such seed for sale; and the names of secondary noxious weed seeds and number per ounce when present singly or collectively in excess of 1 in 5 grams and 1 in 10 grams of the smaller seeds, and per pound when present in excess of 1 in 25 grams and 1 in 100 grams of the larger seeds. Secondary noxious weeds are dodder (*Cuscuta* spp.), horse nettle (*Solanum carolinense*), wild mustards (*Brassica* spp.), wild garlic and wild onion (*Allium* spp.), perennial sow thistle (*Sonchus arvensis*), corncockle (*Agrostemma githago*), buckhorn plantain (*Plantago lanceolata*), and wild radish (*Raphanus raphanistrum*). Seed is prohibited from sale for having a false or misleading label; unless the test for germination has been completed within a nine-month period or if it contains primary noxious weed seeds in excess of tolerance. Primary noxious weeds are Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), and quack grass (*Agropyron repens*).

Two hundred fifty-four samples of field crop seeds were analyzed in the laboratory. Results of analysis, however, are given only for samples that were mislabeled. In Table 1, complete analysis is recorded; but mislabeling, indicated by boldface type, is applied only to the items named above. Wholesaler's name is in boldface type.

Table 1

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed, Origin and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
404	Fescue	Comstock, Ferre & Co., Wethersfield, Conn. Foster-Farrar Co., Northampton Chewings, No. 2950.....	L 98.25 F 97.83	0.35 0.55	0.90 0.86	0.50 0.76	90.00 75.00	11/1955 4/1956	Germination below that stated.
238	Sudan Grass	Albert Dickinson Seed Co., Chicago, Ill. Community Feed Stores, Inc., E. Longmeadow *No. 098536.....	L 98.56 F 98.90	0.01 0.00	1.25 1.06	0.18 0.04	85.00 91.00	2/1956 4/1956	*Required information not given.

Table 1. Results of Inspection and Analyses of Field Seeds—Continued.

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed, Origin and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
Charles C. Hart Seed Co., Wethersfield, Conn.									
446	Fescue	Community Feed Stores, Inc., E. Longmeadow Chewings, No. 4 AY40B	L 98.25 F 97.23	0.35 0.67	0.90 0.75	0.66 1.35	90.00 85.00	1/1956 4/1956	Given formula total more than 100%.
450	Vetch	Hairy or Winter, (*)	L 96.00 F 99.55	0.10 0.02	1.40 0.12	2.50 0.31	80.00 85.9	1/1956 4/1956	*Required information not given.
John D. Lyon, Inc., Cambridge, Mass.									
S-3	Redtop	Wilbraham State Game Farm, Wilbraham No. 8809	L 92.66 F 92.90	0.76 1.14	6.56 5.90	0.02 0.06	85.00 55.00	7/1955 12/1955	Germination below that stated.
Northern Seed Co., E. Providence, R. I.									
1264	Ryegrass	Farmers' Cooperative Exchange, Framingham Center Common, No. 1827	L 99.25 F 99.91	0.40 0.03	0.30 0.06	0.05 0.00	90.00 61.00	2/1956 6/1956	Germination below that stated.
888	Clover	South End Hardware Corp., Boston White, No. 200	L 96.06 F 94.85	0.15 0.42	0.23 0.16	3.56 4.57	81.9 85.9	3/1956 5/1956	Noxious weeds not declared but 9 Buckhorn Plantain per oz. found.
Northrup, King & Co., Minneapolis, Minn.									
14	Fescue	John D. Lyon, Inc., Cambridge Chewings, No. R 5249	L 97.38 F 97.64	1.09 1.18	0.44 0.28	1.09 0.90	85.00 62.00	5/1955 11/1955	Germination below that stated.
13	Fescue	Illiahee, No. 10-RF-1	L 96.27 F 94.15	0.05 0.19	0.88 1.19	2.80 4.47	93.00 61.00	5/1955 12/1955	Germination below that stated.

No.	Grass	Seed Co., Philadelphia, Pa.	L	F	0.32	0.88	0.00	85.00	4/1956	Colonial bentgrass not sufficient— Highland Colonial bentgrass found.
1038	Colonial Bent Grass	Thomas F. Culkeen, Warehouse, Charlestown No. H-276 C	L	F	0.32	0.88	0.00	85.00	4/1956	
					0.41	0.85	0.00	83.00	7/1956	
544	Clover	Wm. C. Scarlett & Sons, Baltimore, Md. Farmers' Cooperative Exchange, Framingham Red, No. 10191 (Origin-Virginia)	L	F	0.50	0.10	0.00	90.00	2/1956	
					0.49	0.03	0.00	89.4	5/1956	Noxious weeds exceeds that stated. 124 Buckhorn Plantain per oz. found.
S-848	Orchard Grass	W. E. Fernald State School, Templeton Colony No. 10149	L	F	0.50	9.50	0.00	90.00	1/1956	
					0.17	8.48	0.10	87.00	5/1956	Given formula total more than 100%.
S-1319	Fescue	Metropolitan District Commission, Revere Chewings, No. 6347	L	F	0.20	1.70	0.10	85.00	1/1956	
					0.17	0.95	0.00	67.00	7/1956	Germination below that stated.
1089	Millet	Foxtail, No. 2534	L	F	0.20	0.50	0.30	85.00	2/1956	
					0.46	1.03	0.12	63.00	6/1956	Germination below that stated.
822	Clover	The Stanford Seed Co., Buffalo, N. Y. Cutler Grain Co., Palmer Med. Red No. 6173 (Origin-Canada)	L	F	0.07	0.22	0.50	84.6	1/1956	
					0.13	0.78	1.34	87.4	5/1956	Noxious weeds not declared but 5 Buckhorn Plantain per oz. found.
1197	Vetch	New Bedford Grain Co., New Bedford Winter (*) No. 6275	L	F	0.20	0.80	0.50	78.7	3/1956	
					0.00	1.72	0.18	70.7	6/1956	*Winter is not a variety name. This is Hairy Vetch. Inert matter exceeds that stated.
S-436	Colonial Bent grass	Vaughan Seed Co., New York Belchertown State School, Belchertown No. 11	L	F	0.15	0.75	0.05	90.00	1/1956	
					0.34	0.33	0.00	91.0	4/1956	Colonial bent not sufficient—High- land Colonial bentgrass found.

Table 1. Results of Inspection and Analyses of Field Seeds—Concluded

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed, Origin and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
S-372	Colonial Bent grass	Worcester State Hospital, Worcester No. 11	L 99.05 F 99.51	0.15 0.00	0.75 0.49	0.05 Trace	90.00 89.00	1/1956 4/1956	Colonial bent not sufficient—Highland Colonial bentgrass found
554	Clover	Viscoid Products Co., Baltimore, Md. Boston Supply Co., Inc., Boston Boronized White, No. IDEZ 4	L 95.85 F 93.55	0.25 2.29	1.90 0.27	2.00 3.89	60-20 91-6	2/1956 5/1956	Weed seed exceeds that stated. Other Crop Seed exceeds that stated
1185	Colonial Bent grass	Whitney Seed Co., Buffalo, N. Y. Essex County Coop. Farming Assoc., Topsfield No. 3573	L 98.80 F 99.55	0.20 0.07	0.80 0.38	0.20 0.00	85.00 86.00	1/1956 8/1956	Colonial bent not sufficient—Highland Colonial bentgrass found.
1181	Fescue	Chewings, No. 26834	L 99.00 F 96.52	0.16 0.33	0.26 0.83	0.48 2.32	90.00 92.00	2/1956 7/1956	Given formula total less than 100%. Other Crop Seed exceeds that stated.

Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261 C.

Each mixture of agricultural seeds shall be labeled to show the commonly accepted name and variety of each agricultural seed component in excess of five percent of the whole and the percentage, by weight, of each in the order of its predominance. The word "mixture," or the word "mixed" shall be shown conspicuously on the label. Other label requirements for mixtures are the same as those for field seeds; hence, are not repeated here since they will be found under Table 1.

Seventy-eight mixtures were received, but only forty-eight were found to vary sufficiently from the label requirements to justify the statement of complete analysis in this table. Items which are mislabeled, also the name and address of the wholesaler, are printed in boldface type.

Table 2

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
859	Joseph Breck & Sons, Inc., Boston, Mass. Finest Date Cemetery, Malden Special Grass (*)					L 95.96 F 97.50	0.32 0.37	3.51 1.97	0.21 0.16	2 1956 6 1956	*Required information not stated. Word mixed or mixture required.
	Components:										
	Illahce Creeping Red Fescue	44.66	39.46	90.00	96.00						
	Kentucky Bluegrass	17.35	20.71	75.00	84.00						
	Domestic Ryegrass	14.93	14.96	90.00	95.00						
	Redtop	9.50		90.00							
	Highland Colonial Bent	4.94		90.00							
	Velvet Bent	4.58		90.00							
	Agrostis spp.		22.37		89.00						
	(Highland Colonial Bent, Redtop Velvet Bent)										
1255	Robinson's Hardware Co., Hudson 1818 Lawn Seed Mixture, No. 71523					L 97.48 F 97.67	0.20 0.40	2.32 1.93		5 1956 8 1956	
	Components:										
	Chewings Fescue	29.69		90.00							
	Colonial Bent	19.78		90.00							
	Kentucky Bluegrass	19.62	20.15	80.00	84.00						
	Illahce Fescue	14.89		90.00							
	Poa Trivialis	13.50	13.28	85.00	86.00						
	Festuca Spp.		41.69		98.00						
	(Chewings & Illahce Fescue)										
	Highland Bentgrass		22.55		92.00						*Colonial Bent not sufficient— Highland Bentgrass found.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261 C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer (When Other Than Wholesale Distributor, and Place Collected)	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks	
		Label	Found	Label	Found							
1054	Arthur R. Cone, Inc., Buffalo, N. Y.											
	General Mills, Inc., No. Abington.....											
	Fairlawn Seed Mixture, No. 38 x 119.....											
					L.....	F.....						
	Components:											
	Creeping Red Fescue.....	33.95	33.15	80.00	57.00							
	Domestic Ryegrass.....	24.75	24.01	90.00	89.00							
	Kentucky 31 Fescue.....	19.60	19.63	80.00	87.00							
	Kentucky Bluegrass.....	12.75	13.26	80.00	83.00							
	White Clover.....	3.00	3.42	65-20	65-17							
	Colonial Bentgrass.....	2.00	2.14	85.00	84.00							
440	The Ryther & Warren Co., Belchertown											
	Fairlawn Grass Mixture, No. 38 x 265.....											
					L.....	F.....						
	Components:											
	Creeping Red Fescue.....	33.95	28.10	80.00	88.00							
	Domestic Ryegrass.....	24.75	24.50	90.00	92.00							
	Kentucky 31 Fescue.....	19.60	19.58	80.00	93.00							
	Kentucky Bluegrass.....	12.75	15.21	80.00	85.00							
	White Clover.....	3.00	5.20	65-20	76-19							
	*Colonial Bent Grass.....	2.00	.....	85.00	.....						
	Highland bentgrass.....				3.93	.....	94.00					
1080	Thomas F. Culkeen, Charlestown, Mass.											
	City of Medford, Oak Grove Cemetery, Medford											
	Special, No. 112.....											
					L.....	F.....						
	Components:											
	Kentucky Bluegrass.....	25.50	24.51	75.00	72.00							
	Redtop.....	23.00	23.76	85.00	77.00							
	Chewings Fescue.....	14.88	14.33	92.00	81.00							
	Perennial Ryegrass.....	14.54	14.25	92.00	95.00							
	Poa Trivialis.....	13.50	13.95	92.00	80.00							
	*Colonial bent not sufficient— Highland bentgrass found.											
1080	Thomas F. Culkeen, Charlestown, Mass.											
	City of Medford, Oak Grove Cemetery, Medford											
	Special, No. 112.....											
					L.....	F.....						
	Components:											
	Kentucky Bluegrass.....	25.50	24.51	75.00	72.00							
	Redtop.....	23.00	23.76	85.00	77.00							
	Chewings Fescue.....	14.88	14.33	92.00	81.00							
	Perennial Ryegrass.....	14.54	14.25	92.00	95.00							
	Poa Trivialis.....	13.50	13.95	92.00	80.00							
	Word mixed or mixture required.											

Thomas F. Cullen, Charlestown, Mass.
 Myles Stunish State School, Taunton
 Special, No. 122

S-1314

Special, No. 422		L	F	93.52	0.23	6.21	0.04	4/1956	7/1956	Word mixed or mixture required.
				92.78	0.54	6.62	0.06			
Components:										
Clewmas Fescue	49.60	43.91	94.00	88.00						Declared but not found. Found but not declared.
Kentucky Bluegrass	34.00	34.85	75.00	65.00						
Colonial bent	9.92		90.00							
Highland bentgrass		14.02		82.00						

Edgewood Farms, Inc., Marysville, Ohio

Palaces Farm Supply, Danvers
 Thirty Green Grass Seed Mixture, No. 76701

1210

Components:		L	F	87.74	0.59	9.78	1.89	1/1956	8/1956
Thirty Green, Grass Seed Mixture, No. 76701									
Domestic Ryegrass	39.65	32.36	85.00	90.00					
Perennial Ryegrass	21.80	20.73	85.00	90.00					
Cleopatra Red Fescue	15.12	16.71	70.00	60.00					
Kentucky Bluegrass	10.13	18.59	70.00	70.00					
White Clover	1.04	1.88	62-20	74-9					

Fairway Seed Co., Jersey City, N. J.

Danvers Hardware Co., Danvers
 Gro Green Mixed Grass Seed, No. N G 56

1193

Components:		L		F		88.64		0.77		9.65		0.94		2/1956		7/1956	
Gro Green Mixed Grass Seed, No. X G 56.....						87.93		0.12		11.29		0.66					
Common Ryegrass.....		63.82	60.41	90.00	87.00												
Ky-31 Tall Fescue.....		12.11	13.94	90.00	76.00												
Timothy.....		11.71	12.26	75.00	88.00												
White Clover.....		1.00	1.32	65-15	81-12												

Flower Lane Farm, Martinsville, N. J.

Stop & Shop, Inc., South Boston
 Maize Carpet Mixed Grass Seed, No. 106-A

1173

Magic Carpet Mixed Grass Seed, No. 106-A									
			L	F	98.36	0.23	1.41	4/1956	7/1956
					98.69	0.20	1.06	0.05	
Components:									
Crooping Red Fescue	30.26	23.43	85.00	80.00					Percentage below that stated.
Perennial Ryegrass	29.70	20.18	88.00	93.00					Percentage exceeds that stated.
Domestic Ryegrass	25.72	41.61	86.00	93.00					Declared but not found.
Timothy	0.68	10.81	84.00	90.00					Found but not declared.
Colonial Bent			85.00						
Highland Bentgrass	3.00	2.66	85.00	78.00					
								

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks	
		Label	Found	Label	Found							
1167	Fredonia Seed Co., Fredonia, N. Y.											
	Alberts Hardware Co., Adams'											
	Vetlex Grass Seed Mixture, No. 5602.											
						L				1/1956		
						F			1.82	8/1956		
	Components:											
		56.15	49.22	80.00	94.00		0.48	6.10				
		14.20	18.30	80.00	94.00		0.22	3.09				
		11.00	12.90	70.00	76.00							
		7.75	7.56	80.00	59.00							
		4.32	.....	80.00	.....						
	.....	6.89	.....	75.00							
	Agrostis spp. (Highland Bentgrass & Redtop)											
887	Garden State Seed Co., Irvington, N. J.											
	South End Hardware Co., Boston											
	Madison Park Mixture, No. 577-85.											
						L				*		
						F			0.28	4/1956	Tag blurred, impossible to read given analysis.	
						*	*	*				
		72.15	*	97.00			0.18	8.00				
		10.65	*	83.00								
		7.41	*	97.00								
		1.33	*	69.00								
		Components:										
	*											
	*											
	*											
	*											
	Walsham Supply Co., Waltham											
	Common Ryegrass & Chewings Fescue Mixture, No. 1018/1019.											
						L				2/1956		
						F			0.13	8/1956		
							0.29	0.64				
							0.04	0.47				
	Components:											
	85.16	85.88	90.00	94.00								
	13.78	13.61	90.00	58.00								
											Germination below that stated.	

Germination below that stated.
Declared but a mixture of High-
land bentgrass and Redtop found

Germination below that stated.

Budd D. Hawkins, Wethersfield, Conn.

F. A. Addis & Co., Florence
Builder's Blend Grass Seed, No. C-102

373 46.97 43.69 90.00 97.00 L 95.22 0.46 4.32 1 1956
..... 18.71 90.00 F 93.63 0.37 5.75 5 1956

Components:

Domestic Ryegrass 18.71 90.00 97.00 Percentage exceeds that stated.
Chewings Fescue 14.94 90.00 86.00
Timothy 12.96 90.00 89.00
Ky. 31 Fescue 0.65 75.00
Kentucky Bluegrass 0.06
White Dutch Clover 13.60
Festuca spp. 55-18
(Creeping Red and Chewings) 51.00
Percentage below that stated.
Germination below that stated.
Creeping Red and Chewings found
Germination below that stated.

Herbst Bros., New York 42, N. Y.
Northampton State Hospital, Northampton
Special Lawn Seed Mixture, No. S M 67

S-413 37.95 38.22 90.00 96.00 L 96.76 0.26 2.90 1 1956
..... 31.24 90.00 F 95.02 0.25 3.97 8 1956

Components:

Common Ryegrass 31.24 90.00 96.00
Creeping Red Fescue 8.66 80.00 86.00
Kentucky Bluegrass 7.84 85.00 87.00
English Bluegrass 3.08 90.00 77.00 Percentage below that stated.
Poa Trivialis 4.50 Percentage exceeds that stated.
Germination below that stated.
Redtop 4.60 90.00 91.00
White Clover 1.97 90.00 78.16
Inc. HS
Hard Seeds must be stated
separately.

Independence Hall Seed Co., Baltimore, Md.

Boston Supply Co., Boston
All Perennial Mixture, No. 26 N

552 15.26 17.81 75.00 79.00 L 90.84 0.29 3.90 2 1956
..... 15.25 80.00 F 93.02 0.14 1.73 5 1956

Components:

Kentucky Bluegrass 15.26 75.00 79.00
Creeping Red Fescue 14.85 80.00
Alta Fescue 14.60 80.00
Chewings Fescue 13.90 80.00
Ky. 31 Fescue 11.98 80.00 94.00
Perennial Ryegrass 5.00 75.00 49.00
Rough Bluegrass 33.36 90.00
Festuca spp. 21.98
(Creeping Red & Chewings)
Festuca arundinacea 76.00
(Appears to be Alta & Kentucky 31)
Germination below that stated.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks	
		Label	Found	Label	Found							
553	Independence Hall Seed Co.—(Continued)											
	Boston Supply Co.—(Continued)											
	Bare Spot R. Blend, No. BSR 6. L F											
	Components:											
	Timothy.	24.29	26.00	75.00	77.00	49.40	0.25	49.85	0.50	2/1956	Germination below that stated.	
	Alta Fescue	9.96	7.36	80.00	71.00	51.19	0.74	46.93	1.14	8, 1956		
	Perennial Ryegrass.	8.66	11.89	80.00	92.00							
	Creeping Red Fescue.	5.20	.....	80.00	.....						
	Chewings Fescue.	1.29	.....	80.00	.....						
	Festuca spp. . . . .	.....	5.94	.....	59.00							
(Creeping Red & Chewings Fescue)												
1261	D. Landreth Seed Co., Philadelphia, Pa.											
	City Grain Co., Marlboro											
	Never Die Grass Mixture, No. 595. L F											
	Components:											
	Kentucky Bluegrass.	21.45	23.28	82.00	64.00	86.99	0.24	8.83	3.94	2/1956	Germination below that stated.	
	Chewings Fescue.	21.29	18.95	90.00	85.00	91.48	0.48	4.26	3.78	7/1956		
	Perennial Ryegrass.	20.28	21.02	90.00	96.00							
	Redtop.	11.04	.....	90.00	.....						
	Poa Trivialis.	4.50	7.43	85.00	36.00							
	Highland Bent.	4.23	.....	85.00	.....						
S-12	John D. Lyon, Inc., Cambridge, Mass.											
	Mass. Department of Public Works, Newburyport											
	Plot, No. 03057. L F											
	Components:-											
	Chewings Fescue.	49.80	49.02	70.00	61.00	91.95	0.94	6.51	0.60	5/1955	Word mixed or mixture required.	
	Redtop.	18.40	.....	90.00	.....	92.84	0.84	6.21	0.11	12/1955		
	Kentucky Bluegrass.	17.00	17.16	80.00	77.00							
	Domestic Ryegrass.	6.75	6.69	90.00	85.00							
	Agrostis spp. . . . .	.....	19.97	.....	88.00							
	(Redtop & Highland bentgrass)											
Redtop declared but Redtop and Highland Bentgrass found.												

Germination below that stated.

Germination below that stated.

Germination below that stated.

Word mixed or mixture required.
5, 1955
12, 1955Redtop declared but Redtop and
Highland Bentgrass found.

[illegible]

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer; When Other Than Wholesale Distributor, and Place Collected	Components		Germination		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
1118	New England Seed Co., Riverside, R. I. Secho Stores, Inc., Cambridge Blended Kentucky Pride Grass Seed, No. 148.....					L 88.98 F 98.24			0.50 0.15	3/1956 5/1956	
	Components:										
	Domestic Ryegrass.....	59.50	65.72	90.00	89.00						
	Kentucky 31 Fescue.....	19.00	18.77	83.00	86.00						
	Timothy.....	9.50	13.50	85.00	92.00						
	*Clover.....	0.98	0.25	85.00	64.4						
				Inc. HS.							*Clover not sufficient—Variety must be stated. Hard Seed must be listed separately Germination below that stated.
558	Northern Seed Co., Providence, R. I. Simons Supply Co., Fall River Kingston Mixture, No. 175.....					L 93.45 F 95.30			0.30 0.86	3/1956 8/1956	
	Components:										
	Chewings Fescue.....	49.00	46.75	90.00	76.00			5.95			
	Kentucky Bluegrass.....	29.75	18.82	85.00	84.00			3.37			
	Astoria Bent.....	14.70		90.00							Germination below that stated. Percentage below that stated. Declared but a mixture of Highland Bentgrass, Redtop and Astoria Bentgrass found.
	Agrostis spp.....		15.06		96						Found but not declared.
	Poa Trivialis.....		14.67		90						
559	Pleasant Valley Mixture, No. 107.....					L 95.15 F 97.71			0.50 0.27	3/1956 8/1956	
	Components:										
	Chewings Fescue.....	29.60	28.64	90.00	79.00						
	Perennial Ryegrass.....	14.70	10.35	90.00	93.00						
	Domestic Ryegrass.....	14.70	20.47	90.00	93.00						
	Kentucky 31 Fescue.....	14.25	14.91	75.00	88.00						
	Danish Bluegrass.....	9.00	9.22	80.00	87.00						
	Kentucky Bluegrass.....	8.00	8.96	75.00	86.00						
	*Colonial Bentgrass.....	4.90		90.00							
	Highland Colonial Bentgrass.....		5.16		92.00						*Colonial Bentgrass not sufficient— Highland Colonial Bentgrass found.

	L	F	96.90 99.31	0.60 0.23	2.00 0.32	0.50 0.14	3/1956 5/1956	Word mixed or mixture required.
South End Hardware Corp., Boston								
Kentucky Pride, No. 190.....								
Components:								
Dormestic Ryegrass.....	58.80		90.00					
Kentucky 31 Fescue.....	19.00		80.00					
Perennial Ryegrass.....	9.80		90.00					
Timothy.....	9.30		85.00					
White Clover.....								
The Page Seed Co., Greene, N. Y.								
Halley's Grain Co., Palmer								
Pasturo, No. L 151056.....			99.80 99.14	0.01 0.10	0.15 0.24	0.04 0.52	2/1956 5/1956	
Components:								
Annual & Perennial Ryegrass.....	84.05		90.00					
Timothy.....	8.23		90.00					
Kentucky 31 Fescue.....	7.52		85.00					
Annual Ryegrass.....								
Perennial Ryegrass.....								
Lee Patten Co., Jersey City, N. J.								
Wed & Beck Co., Southbridge								
Vergreen Lawn Seed Mixture, No. V 56.....			95.00 94.15	0.43 0.17	3.92 5.66	0.65 0.02	2/1956 9/1956	
Components:								
Chewings Fescue.....	28.42		90.00					
Creeping Red Fescue.....	25.48							
Kentucky Bluegrass.....	21.35							
Perennial Ryegrass.....	14.85		90.00					
Highland Bentgrass.....	4.90		90.00					
Festuca spp.....								
(Chewings & Creeping Red Fescue)								
Pedigreed Seed Co., Jersey City, N. J.								
Saintor Hardware Co., Fall River								
Marvelawn New 4-Way General Purpose, No. 56-1.....								
Components:								
Perennial Ryegrass.....	29.83		90.00					
Creeping Red Fescue.....	24.42		85.00					
Timothy.....	19.93		85.00					
Chewings Fescue.....	14.86		90.00					
Highland Bent.....	4.98		90.00					
Kentucky Bluegrass.....	3.68		80.00					
Poa Trivialis.....	0.80		85.00					
Festuca spp.....								
(Creeping Red & Chewings)								
525								
			98.50 98.06	0.30 0.18	1.20 1.70	0.06	2/1956 5/1956	Word mixed or mixture required.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
526	Willow Lawn, No. 312-1.					L				2/1956	Word mixed or mixture required.
	Components:					F				8/1956	
	Creeping Red Fescue.	25.77		80.00		95.14	0.20	4.46	0.20		
	Timothy.	24.86	27.71	90.00	81.00	93.25	0.24	5.91	0.60		
	Illahce Fescue.	12.89		86.00							
	Chewings Fescue.	12.89		86.00							
	Highland Bent.	9.84	11.14	90.00	94.00						
	Kentucky Bluegrass.	8.89	8.25	90.00	70.00						Germination below that stated.
	Festuca spp.		46.15		70.00						Germination below that stated.
	(Ranier Creeping Red Fescue, Illahce and Chewings)										
1043	Philadelphia Seed Co., Philadelphia, Pa. Thomas F. Culkeen Warehouse, Charlestown Old English Merion Mixture Lawn Seed, No. 610.					L				2/1956	
	Components:					F				8/1956	
	Illahce Fescue.	46.53	47.06	90.00	80.00	97.18	0.25	2.32	0.25		
	Merion Bluegrass.	40.85	39.88	85.00	62.00	95.27	0.46	3.89	0.38		
	*Colonial Bentgrass.	9.80		85.00							Germination below that stated. *Colonial Bentgrass not sufficient— Highland Colonial Bentgrass found.
	Highland Colonial Bentgrass.		8.33		89.00						
1248	Ross Bros., Co., Worcester, Mass. Red's Supply Co., Framingham Truegreen Lawn Mixture, No. 314.					L				2/1956	
	Components:					F				9/1956	
	Chewings Fescue.	41.83	39.11	90.00	86.00	93.38	0.54	6.04	0.04		
	Common Ryegrass.	23.53	23.60	90.00	97.00	94.23	0.23	5.46	0.08		
	Kentucky Bluegrass.	10.16	10.69	75.00	61.00						Germination below that stated.
	Redtop.	6.27		90.00							Declared but Highland Bentgrass found.
	Colonial Bentgrass.	6.27		85.00							
	Timothy.	5.32	5.23	90.00	80.00						
	Agrostis spp. (Redtop & Highland Bentgrass)		15.60		91.00						

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Brand Name, Lot Number and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
1191	Whitney Seed Co., Buffalo, N. Y. Essex County Coop. Farming Assoc., Topsfield Velvet Green Lawn Seed Mixture, No. 4256.					L				1/1956	
	Components:					F				8/1956	
	Kentucky Bluegrass.....	25.50	27.36	75.00	86.00		0.40	6.58	0.32		
	Chewings Fescue.....	19.60	20.62	85.00	97.00		0.48	8.63	0.08		
	Domestic Ryegrass.....	9.80	1.36	90.00	85.00						
	Alta Fescue.....	9.80	7.68	85.00	88.00						
	Colonial Bentgrass.....	9.80	.....	85.00	.....					
	Redtop.....	9.20	.....	85.00	.....					
	Poa Trivialis.....	9.00	10.71	80.00	84.00						
	Agrostis spp.....	.....	23.18	.....	89.00						
	(Colonial Bentgrass & Redtop)										Percentage below that stated.
871	Farm Bureau Assoc., Waltham Farm Bureau Shady, No. 9556.					L				2/1956	
	Components:					F				6/1956	
	Chewings Fescue.....	24.50	.....	85.00	.....		0.30	3.75	0.25		
	Creeping Red Fescue.....	24.25	.....	85.00	.....		1.13	2.72	0.13		
	Poa Trivialis.....	18.00	18.41	80.00	90.00						
	Domestic Ryegrass.....	14.85	16.49	90.00	96.00						
	Redtop.....	9.20	.....	85.00	.....					
	Colonial Bentgrass.....	4.90	.....	90.00	88.00						
	Agrostis spp.....	.....	16.75	.....	88.00						
	(Redtop & Highland Bent)										
	Festuca spp.....	.....	44.37	.....	89.00						Declared but Highland Bentgrass found.
	(Creeping Red Fescue & Chewings)										
841	Halley's Grain Store, Palmer Halley's Green, No. 9856					L				3/1956	
	Components:					F				5/1956	
	Chewings Fescue.....	44.10	41.00	85.00	87.00		0.30	4.55	0.25		
	Kentucky Bluegrass.....	21.25	25.02	75.00	80.00		0.19	4.81	0.07		
	Domestic Ryegrass.....	14.85	14.81	90.00	98.00						
	Highland Bentgrass.....	14.70	14.10	80.00	91.00						

Results of Inspection and Germination of Vegetable Seeds Sections 261 B2 and 261 C.

Each separate container of Vegetable Seeds must be labeled to indicate plainly the kind of seed and variety and the name and address of the person who labeled such seed or who sells, offers, or exposes it for sale. For seeds that germinate less than the Massachusetts Standard, the label must also indicate the percentage of germination exclusive of hard seeds, percentage of hard seeds if present, calendar month and year the test was completed, and the words "Below Standard" in not less than 8-point type. Date of test shall not be more than nine months old, exclusive of the month in which the test was completed. Seed that has a false or misleading label may not be sold or offered for sale.

Six hundred and sixteen samples of vegetable seeds were received and tested in the laboratory; however, Table 3 includes only those samples that were found to be mislabeled with regard to requirements of the law.

The wholesaler's name, in all instances, and the germination for those samples of seed found below standard in germination are in boldface type. In samples for which the found germination is not in boldface, the germination is above standard but below germination stated.

Table 3

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed and Lot Number, Dealer When Lther Than Wholesale Distributor, and Place Collected	Germination				Mass. Stand-ard
			Given		Found		
			%	Date of Test	%	Month of Test	
S-425	Turnip	Joseph Breck & Sons, Boston, Mass. Belchertown State School, Belcher-town *Long Island Improved, No. 30.....	90	1/1956	78	4/1956	75
153	Onion	Joseph Breck & Sons, Boston Sweet Spanish, No. 6304.....	70	1/1956	44	4/1956	70
S-356	Turnip	Danvers State Hospital, Hathorne *Long Island Improved, No. 29....	90	1/1956	98	3/1956	75
S-37	Dandelion	Northampton State Hospital, Northampton Arlington Thick Leaf, No. 33.....	70	1/1956	48	4/1956	45
S-268	Turnip	State Farm, State Farm *Long Island Improved, No. 30....	90	1/1956	82	3/1956	75
S-368	Turnip	Worcester State Hospital, Worcester *Long Island Improved, No. 30....	90	1/1956	90	3/1956	75
883	Celery	W. Atlee Burpee Co., Philadelphia, Pa. American Hardware Co., Lawrence Giant Pascal No. 6028.....	65	1/1956	47	7/1956	55
348	Spinach	Comstock, Ferre Co., Wethersfield, Conn. Essex County Coop. Farmers Assoc., Topsfield Special Summer Savoy.....	App. 90	12/1955	76	5/1956	60
122	Spinach	Alexander Forbes & Co., Newark, N. J. Manuel Jacombe, Swansea American, No. 524-1.....	80	12/1955	68	3/1956	60
23	Lettuce	Chas. C. Hart Seed Co., Wethersfield, Conn. Spencer Hardware Co., Westfield Big Boston Head.....	80	12/1955	70	4/1956	80
485	Cabbage	D. Landreth Seed Co., Philadelphia, Pa. Smith Mills Hardware Co., Dartmouth Mammoth Red Rock.....	80	.....	61	5/1956	75

*Long Island Improved is not a Turnip, but a Rutabaga.

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed and Lot Number, Dealer When Other Than Wholesale Distributor, and Place Collected	Germination				Mass. Stand- ard
			Given		Found		
			%	Date of Test	%	Month of Test	
476	Kohl Rabi	D. Landreth Seed Co., Philadelphia, Pa. Smith Mills Hardware Co., Dartmouth White Vienna.....	80	... or better	61	5 1956	75
479	Lettuce	Big Boston.....	80	.....	44	5 1956	80
1130	Radish	H. S. Swan Co., Inc., Shelburne Falls Scarlet Globe, Medium Top.....	85	.....	71	7/1956	75
1072	Carrot	Joseph Sordillo & Sons, Boston, Mass. **Long Improved.....	..	.....	89	5/1956	55
106	Cucumber	Woodruff's Triple "T" Seeds, Inc., Wethersfield, Conn. Pire's Hardware Co., Fall River Marketer.....	80	12/1955	59	3/1956	80

**Long Improved not a variety.

FIELD TESTS OF VEGETABLE SEEDS TYPE AND VARIETY STUDIES—SECTION 261 H

Conducted by the Seed Laboratory*

Again this year, the twenty-first year, field trials were conducted by the Seed Laboratory to determine the trueness-to-type of certain kinds of vegetable seed offered for sale in the State. Tests were run on Radish and Cucumbers from a collection made by the State Seed Inspectors. These samples were taken from 67 retail establishments and represent the offerings of 28 wholesale seedsmen in the State.

Seventy-three lots of Radish and 102 lots of Cucumbers were sampled throughout the Commonwealth by the State Seed Inspectors. All were given laboratory germination tests, but only 69 Radish and 51 Cucumber lots were field-tested. Four radishes were duplicated lots, and only the following six varieties of Cucumbers were field-tested: Marketer, Improved Long Green, Straight Eight, Niagara, White Spine, and Wis. SMR 12.

The radish were planted June 8. Each lot was a ten-foot row, with the rows three feet apart. All lots were duplicated at random in the field, and for each variety in the trials an authentic check sample was also duplicated at random in the field.

The cucumbers were planted June 11 in rows six-feet apart with the plants two-feet apart in the row. Again all lots were duplicated at random with authentic check samples for each variety.

No lots of cucumbers were found to disagree with the variety name as stated on the label or packet; however, once again the desirability of the different lots of the same variety names was quite evident. However, since it is not the function or policy of the Seed Laboratory to place ratings on the field tests, no report is made on this factor.

Below listed are the lots of radish seed which were found not to conform to the name as stated on the packages.

Table 4

Lab. No.	Kind of Seed	Wholesale Distributor, Variety of Seed and Lot Number, Dealer When Other than Wholesale Distributor, and Place Collected	Remarks
375	Radish	Charles C. Hart Seed Co., Wethersfield, Conn. E. C. Addis & Co., Florence	9% Off-type, and 9%-2/3 White
		Ea. White Tipped Scarlet.....	
524	Radish	Comstock, Ferre & Co., Wethersfield, Conn. City Pet Shop, Fall River	30% Sparkler
		Ea. Scarlet Globe.....	
1070	Radish	Joseph Sordillo & Son, Boston, Mass. Red.....	"Red" is not a Variety name. Appears to be Ea. Scarlet Globe

* Waldo C. Lincoln, Jr., Research Instructor
Paul Korpita, Laboratory Assistant

STUDIES OF FLOWER SEEDS

Section 261 H

Conducted by the Seed Laboratory*

In 1956, flower seed studies were again made by the Seed Laboratory. This makes the twenty-first year such field studies have been made to determine the quality of flower seed offered for sale in various retail outlets and to flower growers throughout the State. Seed of 375 lots, representing 57 genera packeted by 25 wholesalers or distributors, were obtained from 72 retailers or grower sources by the State Seed Inspectors. All samples, except two of *Statice*, were given germination tests in the laboratory, and all lots, except 23, were given trueness-to-type tests in the field. Of the 23 lots not tested in the field 6 were biennials, 1 *Lathyrus*, 2 *Ipomea*, 1 *Helianthus*, 11 *Delphinium* and 2 *Lupinus*.

<i>Ageratum</i>	8	<i>Dahlia</i>	6	<i>Nemophila</i>	3
<i>Alyssum</i>	19	<i>Dianthus</i>	7	<i>Nicotiana</i>	3
<i>Amaranthus</i>	2	<i>Dimorphotheca</i>	2	<i>Nigella</i>	1
<i>Anchusa</i>	1	<i>Eschscholzia</i>	4	<i>Petunia</i>	18
<i>Antirrhinum</i>	9	<i>Euphorbia</i>	1	<i>Phlox</i>	8
<i>Calendula</i>	10	<i>Gallardia</i>	2	<i>Portulaca</i>	12
<i>Calliopsis</i>	5	<i>Godetia</i>	3	<i>Reseda</i>	2
<i>Callistephus</i>	26	<i>Gypsophila</i>	4	<i>Salpiglossis</i>	2
<i>Celosia</i>	6	<i>Helianthus</i>	1	<i>Salvia</i>	9
<i>Centaurea Cyanus</i>	13	<i>Helichrysum</i>	7	<i>Scabiosa</i>	10
<i>Centaurea Imerralis</i>	1	<i>Iberis</i>	6	<i>Statice</i>	2
<i>Cheiranthus</i>	1	<i>Impatiens</i>	5	<i>Tagetes</i>	34
<i>Chrysanthemum</i>	2	<i>Linaria</i>	2	<i>Tithonia</i>	1
<i>Clarkia</i>	2	<i>Linum</i>	3	<i>Tropaeolum</i>	7
<i>Cleome</i>	3	<i>Mathiola</i>	3	<i>Verbena</i>	4
<i>Cosmos</i>	17	<i>Mirabilis</i>	2	<i>Zinnia</i>	55
<i>Cynoglossum</i>	1	<i>Molucella</i>	1		

All the flowers were planted June 7. Seeds were sown in 10-foot sections in the row and in all instances, one packet of seed was sufficient to plant the desired section. Germination tests were made in the laboratory for all samples of seed except two lots of *Statice*. The results of the germination tests are listed in Table 5 for samples found unsatisfactory in the field.

The weather during the field trials was good. No severe storms occurred during the critical germination period which allowed for optimum conditions for germination, and the cool summer provided ideal growing weather for most of the flowers.

The labelling found on the flower seed packets sold throughout the State was excellent. Several mixtures were found to be poor but were better in general than those of other years. It is not the policy of the laboratory to make a rating on any of the field test work, but rather to check on the labelling as stated on the packet in comparison with the actual field performance.

The following table lists those samples that were found in the field test and that differed in performance from that stated on the seed packet.

* Waldo C. Lincoln, Jr., Research Instructor
Paul Karpita, Laboratory Assistant

Table 5. Flower Seed Inspection

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected and Variety of Seed	Labora- tory Germin- nation %	Field Tests Performance
170	Zinnia	Joseph Breck & Sons, Inc., Boston, Mass. Peppermint Stick, Mixed Colors.	79	Only 6% with any striping
783	Zinnia	Ferry Morse Seed Co., Detroit, Mich. J. J. Newbury Co., Framingham Peppermint Stick, Mixed.	93	Only 12% with any striping

Table 6. Summary, by Wholesalers, of the Performance of Flower Seeds in the Field

Seeds Packeted by	Total No. [Samples Tested	No. Samples Satisfactory	No. Samples Unsatisfactory
Associated Seed Growers, Inc..... Milford, Conn.	1	1	0
Ball, George K., Co..... West Chicago, Ill.	4	4	0
Breck, Joseph, & Sons, Inc..... Boston, Mass.	26	25	1
Burbank, Luther & Co..... Philadelphia, Pa.	5	5	0
Burpee, W. Atlee Co..... Philadelphia, Pa.	40	40	0
Crosman Seed Corp..... Rochester, N. Y.	23	23	0
De Jager & Sons, Inc..... So. Hamilton, Mass.	5	5	0
Ferry-Morse Seed Co..... Detroit, Mich.	27	26	1
Fredonia Seed Co..... Fredonia, N. Y.	10	10	0
Harris, Joseph Co..... Rochester, N. Y.	2	2	0
Hart, Charles C., Seed Co. Wethersfield, Conn.	40	40	0
Hawkins, Budd D..... Wethersfield, Conn.	13	13	0
Hygrade Seed Co..... Fredonia, N. Y.	13	13	0
Mandeville & King Co..... Rochester, N. Y.	34	34	0
Michael Leonard Seed Co..... Chicago, Ill.	10	10	0
Northrup, King & Co..... Minneapolis, Minn.	38	38	0
The Page Seed Co. Greene, N. Y.	12	12	0
Pelletized Seed Co..... New York, N. Y.	2	2	0
Rice Branch Associated Seed Co.... Cambridge, N. Y.	19	19	0
Rice, Jerome B..... Cambridge, N. Y.	8	8	0
Ross Bros. Co..... Worcester, Mass.	15	15	0
Sears, Roebuck & Co..... Chicago, Ill.	7	7	0
Vaughan's Seed Store..... New York, N. Y.	1	1	0
Woodruff, S. D. & Sons..... Orange, Conn.....	11	11	0
Woodruff's Triple "T" Seed Co..... Wethersfield, Conn.	9	9	0
	375	373	2

Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory—Continued

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Garfield Williamson, Inc. Jersey City, N. J.							1	1	0
Harris, Joseph, Co. Rochester, N. Y.	46	46	0						
Hart, Charles C., Seed Co. Wethersfield, Conn.	55	54	1	7	5	2			
Hawkins, Budd D. Wethersfield, Conn.	4	4	0				1	0	1
Herbst Bros. New York, N. Y.							1	0	1
Hygrade Seed Co. Fredonia, N. Y.	2	2	0						
Independence Hall Seed Co. Baltimore, Md.							3	1	2
Landreth Seed Co. Philadelphia, Pa.	23	19	4				1	0	1
Lee, Patten Co. Jersey City, N. J.				5	5	0	2	1	1
Lyon, John D., Inc. Cambridge, Mass.				3	2	1	11	8	3
Main Potato Growers, Inc. Presque Isle, Me.				1	1	0			
Mandeville & King Co. Rochester, N. Y.	8	8	0						
Michael Leonard Seed Co. Chicago, Ill.	5	5	0						
Miracle Green, Inc. Kansas City, Mo.							2	0	2
New England Seed Co. Riverside, R. I.							1	0	1
Northern Seed Co. East Providence, R. I.				4	2	2	3	0	3
Northrup, King & Co. Minneapolis, Minn.	14	14	0	3	1	2			
O & M Seed Co. Green Springs, Ohio				1	1	0			
The Page Seed Co. Green, N. Y.	12	12	0	9	9	0	4	3	1
Pedigreed Seed Co. Jersey City, N. J.							3	1	2
Pelletized Seed Co. New York, N. Y.	3	3	0						
Philadelphia Seed Co. Philadelphia, Pa.				11	10	1	1	0	1
Rice, Jerome B. Seed Co. Cambridge, N. Y.	8	8	0						
Rice, J. B. Jr., Inc. Shushan, N. Y.	3	3	0						

Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory—Concluded.

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Rice, Branch, Associated Seed, Cambridge, N. Y.	4	4	0	.....	.....	.....	.....	.....	.....
Robinson & Son, Lawrence, Mass.	1	1	0	.....	.....	.....	.....	.....	.....
Ross Bros. Co., Worcester, Mass.	20	20	0	.....	.....	.....	1	0	1
Scarlett, Wm. G. & Sons, Baltimore, Md.	.....	.....	.....	44	40	4	9	5	4
Scott, O. M. & Co., Marysville, Ohio	.....	.....	.....	.....	.....	.....	2	1	1
Sordillo & Sons, Boston, Mass.	10	9	1	.....	.....	.....	.....	.....	.....
Stanford Seed Co., Buffalo, N. Y.	.....	.....	.....	38	36	2	2	0	2
Sunrise Farm, Martinsville, N. J.	.....	.....	.....	.....	.....	.....	2	0	2
Teweles, L., Seed Co., Milwaukee, Wisc.	.....	.....	.....	1	1	0	2	0	2
Tri-State Seed Co., Philadelphia, Pa.	9	9	0	.....	.....	.....	.....	.....	.....
Vaughans Seed Co., New York City, N. Y.	23	23	0	2	0	2	.....	.....	.....
Viscoïd Products, Baltimore, Md.	.....	.....	.....	1	0	1	.....	.....	.....
Whitney Seed Co., Buffalo, N. Y.	.....	.....	.....	39	37	2	3	0	3
Woodruff, F. H. & Sons, Milford, Conn.	67	67	0	1	1	0	2	2	0
Woodruff, S. D. & Sons, Orange, Conn.	2	2	0	.....	.....	.....	2	0	2
Woodruff's Triple "T" Seed Co. . . . Wethersfield, Conn.	17	16	1	.....	.....	.....	.....	.....	.....
	616	600	16	254	224	30	78	29	49

Inspection of Commercial Feedstuffs

by

Feed Control Service Staff

Massachusetts Agricultural Experiment Station

Jan. 6, 1958





INSPECTION OF COMMERCIAL FEEDSTUFFS

By Feed Control Service Staff

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INTRODUCTION

In this bulletin, among other results, are analytical data concerning the drug and vitamin content of various products. Some of these data show that the products contain slightly lower than guaranteed amounts of drugs or vitamins.

Most of the drug and some of the vitamin assay methods used to obtain the listed results are relatively new. These methods do not yield results as precise as those obtained by methods for the determination of some of the inorganic elements, for example.

Therefore, if the listed drug or vitamin results are within 10 percent of the guaranteed amounts it may be considered that the drugs or vitamins are present in substantially the amounts guaranteed.

The drugs or vitamins found in amounts seriously below those guaranteed are indicated either by asterisks or numbers with explanations in the footnotes.

Brands Substantially Complying with Guarantees

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number Sample Analyzed
Acme-Evans Co., Inc.		Battle Creek Dog Food Co.	
Acme Wheat Bran.....	1	Miller's Dog Cookies.....	1
Acme Wheat Standard Middlings with screenings.....	1	Miller's Dog Meal.....	1
		Miller's Kibbles Dog Food.....	1
L. P. Adams Co.		Beacon Milling Co., Inc.	
Greylock Brand 16% Dairy Feed....	1	Auburn "20".....	1
		Auburn "16".....	1
Albers Milling Co.		Auburn "14".....	1
Albers Calf Manna.....	1	Beacon "15" with Pellets.....	1
		Beacon Balancer Pellets.....	1
Allied Mills, Inc.		Beacon Breeder All-Mash.....	1
Sugarine 16% Dairy "E".....	1	Beacon Broiler Finisher.....	1
Wayne Calf Starter.....	1	Beacon Calf Grower.....	1
Wayne 20% Dairy.....	1	Beacon Dairy Fitting.....	1
Wayne 16% Dairy.....	1	Beacon "22" Egg Mash.....	1
Wayne Dog Food.....	1	Beacon "18" Growing Mash.....	1
Wayne Egg Mash.....	1	Beacon Grower All-Mash.....	1
Wayne Fitting Ration.....	1	Beacon Market Egg All-Mash.....	1
Wayne Growing Mash.....	1	Beacon Steer Fattener.....	1
Wayne Horse Feed.....	1	Beacon "18" Test Cow Ration.....	1
Wayne Mash Layer.....	1	Beacon "16" Test Cow Ration.....	1
Wayne Pork Maker.....	1	Beacon "14" Test Cow Ration.....	1
Wayne Rabbit Ration.....	1	Beacon "20" Turkey Grower.....	2
Wayne Sweet Bulky Feed.....	1	Beacon Turkey and Game Bird Breeder	1
Wayne Tail Curler.....	1	Beacon Turkey & Game Bird Fitting	1
Wayne Turkey Finisher.....	1	Beacon Turkey & Game Bird Flushing	1
Wayne Universal Dairy Feed.....	1	Mash.....	1
Wayne Universal Egg.....	1	Beacon Turkey & Game Bird Grower	1
Wayne Universal Grower.....	1	Be-Co-Lass.....	1
Wayne Universal Turkey Grower....	1		
American Crystal Sugar Co.		Bernardston Auto Exchange	
Plain Dried Beet Pulp.....	1	Streeter's Dog Meal.....	1
American Maize-Products Co.		Best Feeds & Farm Supplies, Inc.	
Amazo Corn Gluten Meal.....	1	Joy Dog Food.....	1
Arcady Farms Milling Co.		Blatchford Calf Meal Co.	
Arcady Complete Rabbit Pellets....	1	Blatchford's Calfadine.....	1
Arcady Wonderfat Station Feed.....	1		
Arcady Wonderfat Station Feed Pel- lets.....	1	Bonavista Fish Meals and Oils Ltd.	
Rockland Guinea Pig Diet.....	1	Fish Meal.....	1
Rockland Mouse Diet.....	1		
Rockland Rabbit Ration.....	1	Borden Co., Special Products Div.	
Rockland Rat Diet Complete.....	1	Borden's M R B Milk Replacer Base...	1
Archer-Daniels-Midland Co.		Borden Grain Co.	
Archer Quality 44% Protein Solvent Extracted Soybean Oil Meal....	1	Borden's 14 Fitting.....	1
		Borden's Laying Mash.....	1
Argo Co. of Canada, Ltd.		Borden's Super Mash 16.....	1
Argo Bran.....	1	Borden's Super Starter and Broiler Feed	1
		Borden's Sweet 16 Dairy.....	1
Atlantic Processing Co.		Bourre Distributing Co.	
Smith's Life Line Fish Meal.....	1	Little Rhody Dog Meal.....	1
Edward R. Bacon Grain Co.		C. W. Brister & Son	
Bacon's Corn Gluten Feed.....	1	Prize Mixed Feed.....	1
E. W. Bailey & Co., Inc.		Buckeye Sugars, Inc.	
Bailey's Calf Ration.....	1	Dried Beet Pulp.....	1
Bailey's Complete Egg Ration.....	1		
Bailey's 16% Dairy Ration.....	1	Canada Starch Co., Ltd.	
Bailey's Rabbit Pellets.....	1	Edwardsburg Corn Gluten Feed.....	1
Barber & Bennett, Inc.		Cargill, Inc.	
Fort Orange 12% Fitting and Calf Grain Ration.....	1	34% Protein Solvent Extracted Lin- seed Oil Meal.....	1
Fort Orange Horse Feed.....	1	44% Protein Solvent Extracted Soy- bean Oil Meal.....	1
Fort Orange Laying Mash.....	1		
Fort Orange 15% Test Ration.....	1		

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Central Soya Co.		Wirthmore Complete Growing Ration	1
Central 50% Solvent Extracted Soybean Oil Meal	1	Wirthmore Kibbled Dog Biscuit	1
Central Star Brand Solvent Extracted Soybean Oil Meal	1	Wirthmore Fattening Pellets	2
J. Cherry & Sons, Ltd.		Wirthmore 14 Dairy Fitting Ration	1
Wheat Bran	1	Wirthmore 16 Dairy Record Ration	1
*Wheat Shorts	1	Wirthmore Fodder Greens	1
Clinton Corn Processing Co.		Wirthmore Green Mountain 20	1
Clinton 21% Protein Corn Gluten Feed	1	Wirthmore Green Mountain 16	1
De Milling Corp.		Wirthmore Green Mountain 14	1
De 1 Apple Pomace	1	Wirthmore Green & Egg Mash	2
Wheat Bran	1	Wirthmore Hi-Ener-G 16	1
Lyde Complete Calf Starter	1	Wirthmore Hi-Ener-G Breeder	1
Lyde Complete Layer and Grower Mash	1	*Wirthmore Hog Grower	2
Lyde Complete Rabbit Pellets	1	Wirthmore Horse Feed	2
Lyde Dog Food	1	Wirthmore Mink Food	1
Lyde Dry & Freshening Ration	1	Wirthmore Meatless Mink	1
Lyde H-E Complete Breeder Mash	1	Wirthmore Pig & Sow Feed	1
Lyde Horse Feed	1	Wirthmore Rabbit Pellets	1
Lyde Life Span 15	1	Wirthmore Sheep and Goat Ration	1
Lyde Market Egg Mash	1	Wirthmore Stock Feed	1
Lyde M.B.F. (Meat Bird Finisher)	1	Wirthmore Super Pellets	1
Lyde Pig and Sow Ration	1	Wirthmore Complete Turkey Breeder Ration	1
Lyde Poultry Mixing Ration	1	Wirthmore Complete Turkey Fattening Ration	1
Lyde Super Egg Mash	1	Wirthmore Turkey Growing Ration	1
Lyde Test Cow 18	1	Wirthmore Twin-Mix Calf Ration	1
Lyde Test Cow 16	1	W. B. Dashiell Co.	
New England 16 Dairy Ration	1	"Dashiell Brand" 41 Per Cent Protein Cottonseed Meal	1
Wheat Standard Middlings	1	Dean & Lee	
Co-operative Starch Co.		Horse Feed	1
Co-Star Brand Dried Potato Pulp and Molasses	1	Pathfinder Complete Laying	1
Commercial Solvents Corp.		Pilgrim Egg Producer	1
C.S.-Basic Dried Grain & Corn Syrup Fermentation Solubles (Butyl)	1	Pioneer Complete Rabbit Pellets	1
Community Service, Inc.		Pioneer Dairy Ration 16	1
Community 18% Dairy Ration	1	Delaware Mills, Inc.	
Community 16% Dairy Ration	2	Delaware Complete Layer	1
Community Fitting Ration	1	Delaware Complete Starter and Grower	1
Community Laying Mash	1	Delaware Egg Mash	1
Consolidated Rendering Co.		Delaware Growing Mash	2
Consolidated Feeding Bone Meal	2	Delaware H-E Grower	1
Consolidated 47% Meat & Bone Scrap	2	Delaware H-E Layer	1
Consolidated 45% Meat & Bone Scrap	1	Delaware Laying Mash	1
Corn Products Refining Co.		Delaware Rabbit Pellets	1
Corn Brand 21% Protein Corn Gluten Feed	1	Delaware Sweet 16% Dairy Feed	1
Diamond Brand Corn Gluten Meal	1	Delphos Grain & Soya Products Co.	
Curry & Sons Grain Co.		44% Protein Soybean Oil Meal (Solvent Extracted)	1
Curry's Gro-Laying Mash	1	F. Diehl & Son, Inc.	
Curry's Gro-Grain & Feed Co.	1	Fitting	1
& P Grade A Laying Mash	1	Grower	1
& P Growing Mash	1	Starter	1
& P Pig & Hog Feed	1	Dietrich & Gambrill, Inc.	
& P Starter & Broiler Ration	1	D & G All-Purpose Mash	1
Cus. M. Cox Co.		D & G Breeder Mash	1
Cox W 16% Dairy Feed	1	D & G Dry Cow Fitting Ration	1
Wirthmore Breeder Mash	1	D & G Fleshing Pellets	1
Wirthmore Calving Ration	1	D & G Rabbit Feed Pelleted	1
Wirthmore Complete Breeder Ration	1	D & G Turkey Growing Mash	1
Wirthmore Complete Chick Starter	1	Frederick Laying Mash	1
Wirthmore Complete Egg Ration	1	Gambrill's Growing Mash	1
		Gambrill's Laying Mash	1
		Domestic Concentrates, Inc.	
		Dried Beet Pulp	1
		Dominion Malting (Ontario) Ltd.	
		Dried Brewers' Grains	1

See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number Sample Analyzed
John C. Dow Co.		John W. Eshelman & Sons	
Dow's Crumpled Meal.....	1	Pennsy 16 Dairy Feed.....	1
Dow's Crunchy Dog Food.....	1	Pennsy Laying Mash.....	1
Dow's Dog Biscuits.....	1	Red Rose Breeder Mash.....	1
Doyle Packing Co., Inc.		Red Rose Complete Growing Ration	1
Strongheart Dog Meal.....	1	Red Rose 16 Dairy Feed.....	1
Drackett Products Co.		Red Rose Dog Biscuit Kibbled.....	1
Drackett 44% Protein Soybean Oil		Red Rose Dog & Puppy Food.....	1
Meal Solvent Extracted.....	1	Red Rose Fitting Ration.....	1
Duluth Universal Milling Co.		Red Rose Hog Meal.....	1
Duluth Wheat Bran with screenings		Red Rose Horse Feed.....	1
not exceeding mill run.....	1	Red Rose Laying Mash.....	1
Duluth Wheat Standard Middlings		S-O-S.....	1
and screenings.....	1	Essex County Cooperative Farming	
J. L. Dunnell & Son		Association	
Excel 18% Dairy Ration.....	2	S-X All-Mash Breeder.....	1
Excel Fitting Ration.....	2	S-X All-Mash Grow-Egg.....	1
Excel Laying Mash.....	2	S-X Breeder.....	1
Excel Horse Feed with Molasses.....	2	S-X 18% Dairy Ration.....	1
Starter and Grower—Horner's.....	1	S-X 14% Fitting Ration.....	1
E. I. du Pont de Nemours & Co.		S-X Grow-Egg Mash.....	1
Du Pont Two-Sixty-Two Feed Com-		S-X Starter and Broiler—Connecticut	
pound.....	1	Formula.....	1
Eastern States Farmers' Exchange, Inc.		Evans Milling Co., Inc.	
Calf Starter.....	1	Emco Hominy Feed.....	1
Calving Ration.....	1	Farm Bureau Association	
Champion.....	1	22% Breeder Mash.....	1
Class Leader.....	1	Breeder Mash.....	1
Darimore.....	1	Calf Grower.....	1
Dog Feed.....	1	Chick Starter Mash.....	1
Fulpail.....	1	Complete Breeder Mash.....	1
Goalmaker.....	1	Complete Developer Mash.....	1
Milkmore.....	2	Complete Market Egg Mash.....	1
Milksaver.....	1	Dairy 20%.....	2
Pork Builder.....	1	16% Dairy Ration.....	1
Rabbettes.....	1	16% Dairy Ration "Fine".....	1
Sweepstakes.....	1	14% Dairy Ration "Fine".....	1
Turkey Finisher Pellets.....	1	Developer Mash.....	1
Turkey-Grower.....	1	Finisher Mash.....	1
Eckhart Milling Co.		Fitting Ration.....	1
Standard Wheat Middlings with		Hog Feed.....	1
ground re-cleaned wheat screenings	1	Horse Feed.....	1
Elmore Milling Co., Inc.		Market Egg Mash.....	1
Elmore Complete Growing Ration....	1	Maternity Ration.....	1
Elmore Complete Market Egg Ration	1	14% Milking Ration.....	1
Elmore Complete Rabbit Ration Pellets	1	Rabbit Food Pellets.....	1
Elmore Complete Turkey Breeder		Turkey Grower.....	1
Ration.....	1	Farmers Feed Co.	
Elmore Complete Turkey Growing		Bull Brand Brewers Dried Grains....	1
Ration.....	1	Fishery Products, Inc.	
Elmore Completely Balanced Dog Food	1	Monroe Fish Meal.....	1
Elmore Dry and Freshening Ration....	2	Florida Citrus Canners Cooperative	
Elmore Egg Mash.....	2	Lake Wales Brand Citrus Pulp.....	1
Elmore Fitting Ration 14%.....	1	Flory Milling Co., Inc.	
Elmore Grand Champion Ration.....	1	Flory 20% Grower Mash.....	1
Elmore Growing Mash.....	1	Flory Hi-Broiler Mash.....	1
Elmore Horse Feed.....	1	Flory Hi-Efficiency Grower Mash....	1
Elmore M.A.C. Laying Mash.....	1	Flory Hi-Efficiency Layer Mash.....	1
Elmore Makem-Grow Little Pig Ration	1	*Flory 22% Layer Mash.....	1
Elmore Milk Grains "Sixteen".....	1	Flory 20% Layer Mash.....	1
Elmore Pacemaker 16% Dairy Ration	1	Flory Rabbit Pellets.....	1
Elmore Poultry and Turkey Fitting		Flory Record 16% Dairy Feed.....	1
Ration.....	1	Flory Starter Mash.....	1
Elmore Test Ration 18%.....	1	Flory 20% Starter-Grower Mash....	1
Elmore Test Ration 16%.....	1	Flory Superior 14% Fitting Ration....	1
Elmore Turkey Growing Mash.....	1	*Flory Turkey Grower.....	2

See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
1 A. Fountain		Hales & Hunter Co.	
ountain's Breeder Mash.....	1	Pioneer Bull Feed.....	1
ountain's Complete Growing Mash.....	1	Pioneer Calf Starter.....	1
ountain's Growing Mash.....	1	Pioneer Dairy Production 18.....	1
ountain's Laying Mash.....	1	Pioneer Dry & Freshening.....	1
1 t Industries		Pioneer Greeno.....	1
ropicana's Sweetest Dried Citrus Pulp.....	1	Pioneer Pelleted Flaked 18 Dairy.....	1
1 eral Foods Corp., Gaines Div.		Pioneer Pelleted Flaked 15 Dairy.....	2
aines Dog Biscuits.....	1	Red Comb All Mash Grower.....	1
aines Dog Biscuit Bits.....	1	Red Comb All Mash Layer.....	1
aines Homogenized Dog Meal.....	1	Red Comb Broiler and Starter Concentrate.....	1
aines Krunchon Cubes.....	1	Red Comb C Flakes.....	1
1 eral Mills, Inc.		Red Comb Complete Turkey Growing Ration.....	1
ashburn's Gold Medal Wheat Bran		Red Comb Crate Fattener.....	1
and ground wheat screenings not		Red Comb Egg and Grower Concentrate.....	1
exceeding mill run.....	1	Red Comb Turkey Finisher.....	1
ashburn's Gold Medal Fancy Wheat		Red Comb Turkey Grower.....	1
Mixed Feed with ground wheat			
screenings not exceeding mill run	1	D. Harbeck & Sons	
1 eral Mills, Inc., Feed Stores		*Welcome Dairy Feed.....	2
old Medal Chick Starter.....	1	Welcome Egg Mash.....	1
old Medal Layer Mash.....	1	Welcome Growing Mash.....	1
old Medal 16% Super Dairy Feed.....	1	Welcome Starter and Broiler Mash.....	1
old Medal 14% Super Fitting Ration	1	Harper Feed Mills, Inc.	
old Medal Sweet Feed.....	1	Green Pasture 18% Dairy Feed.....	1
igor Dog Food.....	1	Green Pasture Dairy Fitting Feed.....	1
1 eral Mills, Inc., Larrowe Region		Harco Cal-Packed Dairy Feed.....	1
arro Poultry Surehatch Complete		Harco Complete Calf Ration.....	1
"H-E".....	1	Harco 20% Dairy Feed.....	1
arro Surebroiler Finisher 23.....	1	Harco Dairy Fitting Feed.....	1
arro Surecalf.....	1	Harco Dog Food.....	1
arro Surechamp Food for Dogs.....	1	Harco Hi-Energy Complete Laying	
arro Suregrow Complete "H-E".....	1	Ration.....	1
arro Surelay 26.....	1	Harco Laying Mash.....	1
arro Surelay "H-E".....	2	Harco Test Cow Feed.....	1
arro Surelay Complete "H-E".....	1	Top Profit 16% Dairy Ration.....	1
arro Suremilk 32.....	1	Top Profit Hog Meal.....	1
arro Suremilk 20.....	1	Hartz Mountain Products Corp.	
arro Suremilk 16.....	1	Dog Yummies.....	2
arro Suremilk 14.....	1	H. P. Hood & Sons, Inc.	
arro Surepork 35.....	1	Powdered Skim Milk.....	3
arro Surepork Complete.....	1	Hood Calf Starter.....	1
arro Surepoult.....	1	E. C. & W. L. Hopkins, Inc.	
arro Surerabbit.....	1	Granite State Breeder Mash.....	1
arro Surestart.....	1	Granite State Breeder Mash Plus.....	1
arro Sureturk.....	1	Granite State Complete Mash.....	1
1 eicester By-Products, Inc.		Granite State Dog Food.....	1
lobpro Brand Fish Meal.....	3	Granite State Stock Feed.....	1
1 Goff & Co., Inc.		Hubinger Co.	
off Bon Bons.....	1	KeOKuk Brand 21% Protein Corn	
off Hi-Protein Dog Meal.....	1	Gluten Feed.....	1
off Kibbled Dog Food.....	1	Humphreys-Godwin Co.	
1 on's of Gloucester, Inc.		Dixie Brand 41% Cottonseed Meal ..	1
orton Redfish Meal.....	1	Illinois Cereal Mills, Inc.	
1 ndin Brothers Corp.		Hominy Feed.....	1
olden Harvest 14% Fitting Ration ..	1	Independent Tallow Co.	
olden Harvest 18% Test Ration....	1	Eggaday Brand 47% Protein Meat	
randin's 18 Test Ration.....	1	and Bone Scrap.....	1
1 at Atlantic & Pacific Tea Co.		International Milling Co.	
aily Dog Meal.....	1	Blackhawk Wheat Germ meal.....	1
aily Dog Food Kibbled Biscuit.....	1	Target Wheat Red Dog.....	1
aily Bone Shape Dog Biscuit.....	1		

also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Jaquith & Co., Inc.		Mansfield Milling Co.	
Jaquith 16% Complete Layer Mash..	1	Full Cry Dog Meal.....	1
Jaquith 20% Dairy Ration.....	1	*Money's Worth Dairy Feed 20%.....	1
Jaquith Growing Mash.....	1	Money's Worth Dairy Feed 16%.....	1
Jaquith Horse Feed.....	1	Money's Worth Fitting Ration.....	1
Jaquith 20% Laying Mash.....	1	Money's Worth Growing Mash.....	1
Jaquith Laying Mash.....	1	Money's Worth High Efficiency Complete Mash.....	1
Jaquith Swine Growing & Fattening Feed.....	1	Money's Worth High Efficiency Complete Growing.....	1
Kasco Mills		Money's Worth High Efficiency Laying Mash.....	1
Kasco Complete Dog Food.....	1	Money's Worth Laying Mash.....	1
Kasco Dog Pellets.....	1	Money's Worth Rabbit Pellets.....	1
Kellogg Co.		Money's Worth Turkey Fattener.....	1
Gro-Pup Dog Food.....	1	Money's Worth Turkey Growing.....	1
Gro-Pup T-Bone Dog Biscuit.....	1	Marvin Grain & Hardware Co.	
Spencer Kellogg & Sons, Inc.		Marvin Dog Meal.....	1
34% Protein Old Process (Expeller) Linseed Oil Meal.....	1	Merrimack Farmers' Exchange, Inc.	
Kennel Food Supply		Merrimack All Mash.....	1
KFS Cero Meato Brand Dog Food...	1	Merrimack Calving Ration.....	1
Kerhsaw Oil Mill		Merrimack 16% (Fine) Dairy Ration	1
Palmetto Brand 41% Protein Expeller		Merrimack 14% Fitting Ration.....	2
Cottonseed Meal.....	1	Merrimack Hi-F Layer.....	1
H. C. Knoke & Co.		Methuen Grain Co.	
Barley Feed.....	1	Umpire All-Mash Layer & Breeder..	1
Chas. A. Krause Milling Co.		Minnesota Linseed Oil Co.	
Badger Yellow Hominy Feed.....	1	34% Protein Solvent Extracted Linseed Oil Meal.....	1
Kronick's Coal & Grain Co.		Minute Maid Corp.	
Kronick's Dairy Ration 16%.....	1	Golden Isle Citrus Pulp.....	1
Kronick's Starter-Grower Mash.....	1	Molson's	
Kuder Pulp Sales Co.		Molson's Brewers Dried Grains.....	1
Kuder Dried Citrus Pulp High Sugar		Montmorency Distillery, Ltd.	
Kuder Dried Citrus Pulp High Sugar		Corn Distillers' Dried Grains.....	1
Late Production.....	1	Geo. Q. Moon & Co., Inc.	
Land O'Lakes Creameries, Inc.		Moon Complete Growing Mash.....	1
Non Fat Dry Milk Solids.....	1	Moon Complete Laying Mash.....	1
Lauhoff Grain Co.		Moon 20% Dairy Ration.....	1
Lauhoff Toasted Corn Flakes.....	1	Moon 18% Dairy Ration.....	1
Lauhoff Soya Co.		Moon 16% Dairy Ration.....	1
44% Protein Solvent Extracted Soybean Oil Meal.....	1	Moon Dairy Fitting Ration.....	1
Libner Grain Co., Inc.		Moon Dog Food.....	1
Libner's Dog Food.....	2	Moon Hog Feed.....	1
L. B. Lovitt & Co.		Moon Horse Feed.....	1
*"Lovit Brand" 41% Protein Cottonseed Meal.....	1	Moon Laying Mash.....	1
McMillen Feed Mills		Moon N. E. 20% Laying Mash.....	1
Master Mix 16% Dairy Feed.....	1	Moon 14% Pasture Aid Dairy.....	1
Master Mix Dogburger.....	1	Moon Rabbit Pellets.....	1
Master Mix Egg Mash.....	1	Moon 32% Supplement Ration.....	1
Master Mix Fitting Feed.....	1	Moon 18% Test Ration.....	1
Master Mix Horse Feed.....	1	Moon 16% Test Ration Fortified....	1
Master Mix Turkey Grower.....	1	Jas. F. Morse & Co.	
Manitoba Sugar Co., Ltd.		Morse's 47% Meat & Bone Meal....	2
Dried Beet Pulp.....	1	Morse's 45% Meat & Bone Scraps...	1
		Mowat, Wilson & Co.	
		Dried Beet Pulp.....	1
		National Biscuit Co.	
		Milk Bone Dog Biscuit.....	1
		Pal Tiny Bits.....	1
		Namico Wheat Middlings with ground wheat screenings not exceeding 8	1
		Pure Wheat Bran.....	1

Brands Substantially Complying with Guarantees (Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
ational Distillers and Chemical Corp.		Pillsbury Mills, Inc.	
Nadrisol Brand Corn Distillers Dried Solubles.....	1	Pillsbury's Wheat Standard Middlings with ground wheat screenings not exceeding mill run.....	1
Neumond Co.		Quaker Oats Co.	
Neumond's 26% Brewers' Dried Grains.....	1	Bell Cow Wheat Bran.....	1
orthern Ohio Sugar Co.		Ful-O-Pep Fitting Feed.....	1
GW Dried Beet Pulp.....	1	Ful-O-Pep High Sweet Blend.....	1
ogden Grain Co.		Ful-O-Pep Laying Mash.....	1
Ogden Complete Layer.....	1	Ful-O-Pep Laying Ration.....	1
Ogden Complete Starter Grower Layer Breeder.....	1	Ful-O-Pep Milking Feed.....	1
Ogden 16% Dairy Feed.....	2	Ful-O-Pep Pig-N-Sow Ration.....	1
Ogden Growing Mash.....	1	Ful-O-Pep Rabbit Ration.....	1
Ogden Hi-Energy Laying Mash.....	1	Ful-O-Pep Super Greens.....	1
Ogden Horse Feed.....	1	Ful-O-Pep Test Cow Feed.....	1
Ogden Laying Mash.....	1	Ken-L-Biskit.....	1
Ogden Rabbit Pellets.....	1	Ken-L-Treats.....	1
Ogden 14% S-M-R Ration.....	1	Quick Ken-L-Meal.....	1
Ogden "16" Special.....	2	Quaker Sugared Schumacher Feed.....	1
leans Dog Candy Co.		Victor Feeding Rolled Oats.....	1
Lolli-Pups Dog Candy.....	1	Yellow Hominy Feed.....	1
alm Grain Co.		Corn Germ Cake.....	1
Palm's Complete Mash.....	1	Ralston Purina Co.	
ark & Pollard Co.		Corn and Oat Provender.....	1
Green Acres 14%.....	1	Wheat Bran (Ground wheat screenings not exceeding mill run).....	1
Hi-Prime Complete Turkey Finisher.....	1	Purina B & M Cow Chow.....	1
Hi-Prime Complete Turkey Grower.....	1	Purina Breeder Layena (Complete Ration) E.....	1
Lay or Bust All Mash Breeder.....	1	Purina Bulky Las.....	1
Lay or Bust All Mash Grower.....	1	Purina Cage Layena E.....	1
Lay or Bust All Mash Layer.....	1	Purina Calf Startena E.....	1
Lay or Bust Egg Mash.....	1	Purina Chick Growena E.....	1
Lay or Bust Growing Feed.....	1	Purina Chicken Fatena Checkers E.....	1
Lay or Bust Hi-Valu Pellets.....	1	Purina Cow Chow 18%.....	1
Milk Maid Calf Starter.....	1	Purina Cow Chow 18% D.....	1
Milk Maid 20% Dairy Ration.....	1	Purina Cow Chow E 16%.....	1
Milk Maid 16% Dairy Ration.....	1	Purina Cow Chow 16% (Fine).....	1
Milk Maid Dri-Fresh Ration.....	1	Purina Cow Chow 14%.....	1
Milk Maid Fitting Ration.....	1	Purina 18% Dairy Chow.....	1
Milk Maid Sheep & Goat Feed.....	1	Purina 16% Dairy Chow.....	1
Munchy Dog Food.....	1	Purina D & F Chow.....	1
ark & Pollard Complete Grower.....	1	Purina Dog Chow Checkers.....	1
ark & Pollard Complete Layer.....	1	Purina Dog Chow Kibbled Meal.....	1
ark & Pollard Go-Tu-It Hog Supplement.....	1	Purina Egg Chow E.....	1
ark & Pollard Go-Tu-It Pig Grower.....	1	Purina Egrena E.....	1
ark & Pollard Growing Feed.....	1	Purina Game Bird Breeder Layena.....	1
ark & Pollard Hi-Speed Horse Feed.....	1	Purina Game Bird Growena E.....	1
ark & Pollard Laying Mash.....	1	Purina Hen Chow D.....	1
ark & Pollard Rabbit Pellets.....	1	Purina Hog Fatena E.....	1
orge H. Parker Grain Co.		Purina Layena (Complete Ration) E.....	1
Bill McHugh's Horse Feed.....	1	Purina Milk Chow 18%.....	1
Parker's Hy Energy Complete Growing Mash.....	1	Purina Mink Chow.....	1
Parker's Laying-Breeding Mash.....	1	Purina Omolene.....	1
isco Packing Co.		Purina Poultry Booster Chow E.....	1
Sugar-Sweet Citrus Pulp.....	2	Purina Pullet Developer E.....	1
Sugar-Sweet Citrus Meal.....	1	Purina Rabbit Chow Checkers (20%).....	1
lent Cereals Co.		Purina Rabbit Chow Checkers E.....	1
Hominy Feed.....	1	Purina Super Cage Layena E.....	1
illsbury of Canada, Ltd.		Purina Super Layena (Complete Ration) E.....	1
Jandy Wheat Bran.....	1	Purina Turkey Fatena E.....	1
		Purina Turkey Growena E.....	1
		John Reardon & Sons	
		Register Brand Fish Meal.....	1
		*Register Brand 45% Protein Meat and Bone Scrap.....	2
		Redbird Farm, Inc.	
		Redbird Super Broiler Mash.....	1

See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
D. F. Riley		Swansea Grain Co.	
Riley's 18% Laying Mash.....	12	Swansea Quality All Mash Grower...	2
Robin Hood Flour Mills, Ltd.		Swansea Quality All Mash Layer.....	2
Superior Wheat Bran.....	1	Swansea Quality Broiler Finisher....	1
Rudhard Products, Inc.		Swansea Quality Broiler Ration Super	1
Rudhard Baked Meat Balls.....	1	Swansea Quality Laying Mash.....	2
Russell-Miller Milling Co.		Swansea Quality Turkey Grower.....	1
Occident Wheat Bran.....	1	Taft Bros.	
Occident Wheat Standard Middlings		Taft Dairy Feed.....	1
with ground wheat screenings not		United Co-Operative Farmers, Inc.	
exceeding mill run or 8%.....	1	UCF All Mash Egg.....	1
Occident Wheat Mixed Feed with		UCF Breeder.....	1
ground wheat screenings not ex-		UCF Calf Starter.....	1
ceeding mill run or 8%.....	1	UCF 16% Dairy.....	2
Ryther & Warren Co.		UCF Egg Mash.....	1
Blue Tag Dairy Ration.....	2	UCF Fitting Ration.....	1
Sea Board Supply Co.		UCF Grower.....	1
*Crab Meal.....	1	UCF HI NRG All Mash Breeder....	1
Joseph E. Seagram & Sons, Inc.		UCF HI NRG All Mash Grower &	
Seagram's Corn Distillers Dried Grains	2	Layer.....	1
Seagram's Corn Distillers Dried Sol-		*UCF HI NRG Poultry Finishing	
ubles.....	1	Ration.....	1
Shirriff-Horsey Corp., Ltd.		UCF Poultry Fitting Ration.....	1
J. William Horsey Brand Dried Citrus		UCF Horse Feed.....	1
Pulp.....	1	UCF Layer.....	1
Southern Fruit Distributors, Inc.		UCF Milkmaker.....	1
Bluebird Citrus Pulp.....	1	UCF Mix Feed.....	1
Spratt's Patent (America) Ltd.		UCF Pig & Hog Feed.....	1
Spratt's Assorted Dog Biscuits.....	1	UCF Stock Feed.....	1
A. E. Staley Manufacturing Co.		UCF Super Broiler Mash.....	1
Staley's 21% Corn Gluten Feed....	1	UCF 16% Super Dairy.....	1
Staley's 44% Protein Solvent Ex-		UCF Super Starter.....	1
tracted Soybean Oil Meal.....	1	UCF Turkey Grower & Fattener....	1
Staley's Hi-Pro-Con 50% Protein De-		United Farmer's Co-Operative Creamery	
hulled Solvent Extracted Soybean		Ass'n., Inc.	
Oil Meal.....	1	Dried Skim Milk.....	1
Standard Brands, Inc., Pet Food Division		Unity Feeds, Inc.	
Walter Kendall Hunt Club Burgerbits		Unity Breeder Mash.....	1
Dog Meal.....	1	Unity Broiler Maker.....	1
Walter Kendall Hunt Club Dog Bis-		Unity Calf Super Milk Replacer....	1
cuit.....	1	Unity Complete Rabbit Pellets.....	1
Walter Kendall Hunt Club Full Diet		Unity 20% Dairy Ration.....	1
Dog Meal.....	1	Unity 16% Dairy Ration.....	1
Walter Kendall Hunt Club Kennel		Unity Dairy and Fitting Ration....	1
Pack Kibbled Dog Food.....	1	Unity Growing and Laying Mash....	1
Walter Kendall Hunt Club Kibbled		Unity High Energy Breeder Mash....	1
Dog Food.....	1	Unity High Energy Growing and Lay-	
F. W. Stock & Sons		ing Mash.....	1
Stock's Bran.....	1	Unity Horse Feed.....	1
Stock's Middlings.....	1	Unity Improved Calf Ration.....	1
Sturdy Dog Food Co.		Unity Pig & Hog Ration.....	1
Sturdy Dog Food.....	1	Unity Turkey Finishing Pellets....	1
Sturdy Kibbled Ration.....	1	Universal Grain Co. of N. J.	
Sunshine Biscuit Co., Inc.		Superior Cow Brand Dried Brewers	
Austin's Dog Food.....	1	Grains.....	3
Austin's Meal.....	1	Ventura Grain Co.	
		Every-Day Complete Grower & Layer	
		Mash.....	1
		Every-Day 20% Dairy.....	1
		Every-Day 16% Dairy.....	1
		Every-Day 16% Dairy Pelleted.....	1
		Every-Day Fitting Ration Pelleted...	1
		Every-Day High Efficiency All-Mash	
		Lav r.....	1
		Every-Day Layer-Breeder Mash....	1
		Ventura's 16%.....	1

*See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Italy Mills, Inc.		Blue Seal Standard "16" Dairy Ration	1
Vitality Body Builder Dog Food.....	1	Blue Seal Succulent Feed and Calving Ration.....	1
Vitality Kibbled Biscuits Dog Food..	1	Blue Seal Super Breeder's Mash.....	3
		Blue Seal Test Ration.....	1
P. Washburn Co.		Blue Seal Turkey Growing.....	2
Made Right 20% Dairy.....	1	Western Condensing Co.	
Made Right 16% Dairy.....	1	Peebles' Dried Whey-Product 58% Lactose.....	1
Made Right Fitting Ration.....	1		
Made Right Growing Feed.....	1	Whitmoyer Laboratories, Inc.	
Made Right High Energy Grower Mash.....	1	Whitmoyer Quality 56% Fish Meal..	2
Made Right High Energy Layer Mash	1		
Made Right Horse Feed.....	1	Wilson & Co., Inc.	
Made Right Laying Mash.....	1	Red "W" Brand Blood Meal.....	1
Made Right Pig Feed.....	1		
Made Right Starter.....	1	Wilson's Corn Products, Inc.	
Made Right Stock Feed.....	1	Wilson Hominy Feed.....	2
L. K. Webster Co.			
Blue Seal All-Mash Breeder's Ration	1	Wirthmore Grain Co.	
Blue Seal All-Mash Egg Ration.....	1	*Bliss Dairy Ration.....	1
Blue Seal All-Mash Growing Ration..	1	Preferred Complete Growing Mash..	1
Blue Seal Calf Starter.....	1	Preferred Complete Laying Ration..	1
Blue Seal "20" Dairy Ration Coarse..	1	Preferred Growing Feed.....	1
Blue Seal Fine "20" Dairy Ration....	1	Preferred High Energy Grower.....	1
Blue Seal "16" Dairy Ration Coarse..	1	Preferred High Energy Layer.....	1
Blue Seal Egg Mash.....	1	Preferred Laying Mash.....	1
Blue Seal Fitting Ration.....	1	Wood's Stock Feed.....	1
Blue Seal Goat Feed.....	1		
Blue Seal Growing Mash.....	1	Worcester Grain & Coal Co.	
Blue Seal Horse Feed.....	1	Just Right 16% Dairy Feed.....	1
Blue Seal Pig Feed.....	1	Just Right Egg Mash.....	1
Blue Seal Poultry and Turkey Fitting	1		
Blue Seal Rabbit Pellets.....	1		

*See also table of "Brands Not Conforming to Guarantees."

Brands Not Conforming to Guarantees

This table includes brands that are one percent or more under guarantee in protein or fat or are one and one-half percent or more over guarantee in fiber.

Manufacturer and Brand	Protein		Fat		Fiber	
	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed
	%	%	%	%	%	%
L. P. Adams Co.						
Greylock Brand Laying Mash.....	15.6	20.0	—	—	4.4	5.5
Arcady Farms Milling Co.						
Arcady Wonder Dog Food (1).....	28.1	26.0	6.9	6.0	5.0	5.5
Armour & Co.						
Dash Dog Food Meal.....	30.9	26.5	5.3	7.5	5.0	5.0
Barber & Bennett, Inc.						
Fort Orange Dog Food.....	24.5	26.0	—	—	4.4	5.5
Clyde Milling Corp.						
*Clyde Complete Calf Starter.....	17.4	19.0	—	—	6.7	7.5
*Clyde Super Egg Pellets.....	20.0	21.0	—	—	5.0	5.0
Consolidated Rendering Co.						
*Corenco 47% Meat & Bone Scrap.....	41.5	47.0	—	—	—	—
Chas. M. Cox Co.						
Wirthmore 16 Dairy Ration.....	13.8	16.0	—	—	6.3	9.0
*Wirthmore Hog Grower.....	12.5	15.0	4.2	4.0	5.3	6.0
F. Diehl & Son, Inc.						
Dairy.....	15.0	16.0	—	—	—	—
Layer.....	18.8	20.0	—	—	6.0	7.5
Dow Brewery, Ltd.						
Dried Brewers Grains.....	22.7	22.0	5.7	7.0	—	—
Flory Milling Co., Inc.						
*Flory 22% Layer Mash.....	20.7	22.0	—	—	6.2	5.5
*Flory Turkey Grower.....	18.5	20.0	—	—	5.0	5.0
General Mills, Inc., Larowe Region						
Larro Surebroiler Starter with Nicarbazine .0125% 3-Nitro-4-Hydroxyphenyl- larsonic Acid. 005%.....	24.8	26.0	—	—	—	—
Great Atlantic & Pacific Tea Co.						
Daily-Egg Laying Mash.....	18.3	20.0	—	—	—	—
D. Harbeck & Sons						
*Welcome Dairy Feed.....	18.7	20.0	—	—	—	—
Welcome Dairy Feed.....	17.6	20.0	—	—	6.5	10.0
L. B. Lovitt & Co.						
"Lovit Brand" 41% Protein Cottonseed Meal.....	39.6	41.0	—	—	—	—
Mansfield Milling Co.						
*Money's -Worth Dairy Feed 20%.....	18.9	20.0	—	—	—	—
Money's Worth Daily Feed 20%.....	19.1	20.0	2.9	4.0	8.0	9.5

*See also table of "Brands Substantially Complying with Guarantees."

(1) Guaranteed 1500 units vitamin A per pound; found, none.

This table includes brands that are one percent or more under guarantee in protein or fat or are one and one-half percent or more over guarantee in fiber.

Manufacturer and Brand	Protein		Fat		Fiber	
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed
	%	%	%	%	%	%
John Reardon & Sons						
*Register Brand 45% Meat and Bone Scrap	42.3	45.0	10.7	8.0	—	—
D. F. Riley						
*Riley's 16% Dairy Ration.....	14.4	16.0	3.7	4.5	8.8	10.0
Riley's 16% Dairy Ration.....	15.3	16.0	3.3	4.5	—	—
Sea Board Supply Co.						
*Crab Meal.....	27.0	31.0	—	—	—	—
Joseph E. Seagram & Sons, Inc.						
Seagram's Corn Distillers Dried Solubles	25.2	30.0	9.6	5.0	3.6	5.0
Swansea Grain Co.						
Swansea Quality Laying Mash.....	19.0	20.0	4.5	4.0	3.9	4.0
United Co-Operative Farmers, Inc.						
UCF HI NRG Poultry Finishing Ration	18.9	20.0	—	—	4.0	4.0
Vitality Mills, Inc.						
Vitality Instat Mix Dog Food.....	28.3	27.0	5.6	7.0	—	—
W. P. Washburn Co.						
Made Right Complete Layer.....	16.0	16.0	—	—	8.1	6.0
Wirthmore Grain Co.						
*Bliss Dairy Ration.....	17.5	20.0	—	—	—	—
Bliss Dairy Ration.....	15.8	20.0	—	—	—	—

*See also table of "Brands Substantially Complying with Guarantees."

(1) Guaranteed 1500 units vitamin A per pound; found, none.

Feeds Containing Drugs

Manufacturer and Brand	Drug	Found	Guarantee
Allied Mills, Inc.			
Wayne Rocket Broiler Finisher.....	3-Nitro ¹	.005%	.005%
Wayne Rocket Broiler Starter.....	{3-Nitro Nicarbazin ²	.005% .0132%	.005% .0125%
Wayne Universal Turkey Grower.....	4-Nitro ³	.025%	.025%
Beacon Milling Co., Inc.			
Beacon Broiler Finisher.....	{Nicarbazin..... Arsanilic Acid...	.0115% .0082%	.0125% .009%
Beacon C-C Pellets.....	Sulphur	5.1%	5.0%
Beacon Complete Starter.....	Nicarbazin	.0110%	.0125%
Beacon Grower All-Mash.....	Nicarbazin	.0113%	.0125%
Beacon Poultry Finisher.....	Dienestrol Diacetate	.0085%	.007%
Beacon Starter-Broiler.....	{Nicarbazin Nicarbazin Arsanilic Acid	.0103% .0098% .0086%	.0125% .0125% .009%
Beacon S. O. Control Mash Base.....	Sulfaquinoxaline	.10%	.1%
Beacon Turkey Grower.....	4-Nitro	.046%	.0375%
Beacon Turkey Starter.....	Sulfaquinoxaline	.0165%	.0175%
Clyde Milling Corp.			
Clyde Chick Starting Mash.....	Nicarbazin	.0142%	.01%
Clyde H-E Broiler Ration.....	{Nicarbazin Arsanilic acid	.0127% .009%	.01% .009%
Clyde Meat Bird Finisher.....	{Nicarbazin Arsanilic acid	.0127% .0093%	.01% .009%
Chas. M. Cox Co.			
Wirthmore Broiler Perk.....	{Chlortetracycline ¹ Furazolidone Nicarbazin	.025 g/lb ⁵ .011% .0083%	.05 g/lb .011% .0125%
Wirthmore Complete Chick Starter.....	Sulfaquinoxaline	.016%	.0175%
Wirthmore Complete Growing Ration.....	Sulfaquinoxaline	.015%	.0125%
Wirthmore Hi-Ener-G 16.....	Sulfaquinoxaline	.014%	.0125%
Wirthmore Improved Hi-Ener-G Starter and Broiler Ration.....	{Nicarbazin Sodium Arsanilate	.165% .0079%	.0125% .0088%
Wirthmore Poultry Mash Base.....	Sulfaquinoxaline	.12%	.1%
Wirthmore Quickies.....	Chlortetracycline	.075 g/lb	.1 g/lb
Wirthmore Turkey Growing Ration.....	4-Nitro	.027%	.025%
Dawe's Laboratories, Inc.			
Dawe's Turkey Base.....	3-Nitro	.210%	.198%
Dean & Lee			
Pathfinder Starter-Broiler.....	{3-Nitro Nicarbazin	.005% .013%	.005% .0125%
Dietrich & Gambrill, Inc.			
D & G Broiler Finishing Ration.....	Nicarbazin	.089%	.0125%
D & G Special Broiler Mash.....	Nicarbazin	.014%	.0125%

¹ 3-Nitro-4-Hydroxyphenylarsonic Acid² Nicarbazin (4,4'-Dinitrocarbanilide 2-Hydroxy-4,6-dimethylpyrimidine)³ 4-Nitrophenylarsonic Acid⁴ Chlortetracycline Hydrochloride⁵ Seriously deficient.

Feeds Containing Drugs—(Continued)

Manufacturer and Brand	Drug	Found	Guaranteed
Eastern States Farmers' Exchange, Inc.			
Cashmaker.....	Arsanilic Acid	.009%	.009%
Defender.....	Furazolidone	.012%	.011%
Finisher.....	Nicarbazin	.0125%	.0125%
Matchmaker.....	Arsanilic Acid	.0123%	.0132%
Matchmaker.....	Arsanilic Acid	.0132%	.0132%
Minuteman.....	Sulfaquinoxaline	.05%	.05%
Pacemaker.....	Chlortetracycline	.05 g/lb	.05 g/lb
	Nicarbazin	.0125%	.0125%
Pacemaker Plus.....	Arsanilic Acid	.0084%	.009%
	Nicarbazin	.0125%	.0125%
Turkey Starter.....	Arsanilic Acid	.0096%	.009%
	Sulfaquinoxaline	.017%	.0175%
Elmore Milling Co., Inc.			
Elmore Broiler Finisher Pellets.....	3-Nitro	.005%	.005%
Elmore Chixsaver.....	Nicarbazin	.0100%	.0125%
	Nicarbazin	.0033% ⁵	.0125%
Elmore Fryer-Broiler Ration.....	3-Nitro	.0011% ⁵	.005%
	Nicarbazin	.0104%	.0125%
Elmore Fryer-Broiler Ration.....	3-Nitro	.0054%	.005%
	Nicarbazin	.0102%	.0125%
Elmore High Antibiotic Picker-Upper Mash.....	3-Nitro	.0053%	.005%
	Bacitracin	.095 g/lb	.075 g/lb
Elmore Super Broiler Ration.....	Chlortetracycline	.125 g/lb	.125 g/lb
	Oxytetracycline ⁷	.125 g/lb	.125 g/lb
Elmore Super Broiler Ration.....	Nicarbazin	.0129%	.0125%
	3-Nitro	.0051%	.005%
Elmore Turkey Growing Mash.....	Nicarbazin	.0099%	.0125%
Elmore Turkey Starting Mash (1A).....	4-Nitro	.042%	.025%
	Sulfaquinoxaline	.0143%	.0175%
	3-Nitro	.005%	.005%
John W. Eshelman & Sons			
Red Rose T-C Feed.....	Chlortetracycline	.013 g/lb	.025 g/lb
Red Rose T-C Feed.....	Oxytetracycline	combined ⁵	.025 g/lb
	Chlortetracycline		.025 g/lb
	Oxytetracycline		.025 g/lb
Essex County Cooperative Farming Ass'n.			
S-X All-Mash Grow-Egg.....	Sulfaquinoxaline	.0102%	.0125%
S-X Starter and Broiler—Connecticut Formula.....	Nicarbazin	.0105%	.0125%
	Sodium Arsanilate	.0068%	.0088%
Farm Bureau Association			
Chick Starter Mash.....	Sulfaquinoxaline	.016%	.015%
Chlortetracycline (Aureomycin) Mixture.....	Chlortetracycline	.085 g/lb	.1 g/lb
Complete Developer Mash.....	Sulfaquinoxaline	.011%	.0125%
Finisher Mash.....	Nicarbazin	.0102%	.0125%
High Energy Broiler & Starter Mash Base.....	Sulfaquinoxaline	.052%	.05%
Rabbit Food Pellets.....	Sulfaquinoxaline	.018%	.015%
Turkey Starter.....	Sulfaquinoxaline	.024%	.0175%
Flory Milling Co., Inc.			
Flory Stim-U-Lets.....	Chlortetracycline	.1 g/lb	.1 g/lb
Fred A. Fountain			
Fountain's Improved High Energy Starter-Broiler Ration.....	Nitrophenide	.019%	.01875%

⁵ Seriously deficient⁶ Chlortetracycline hydrochloride and oxytetracycline hydrochloride were measured as chlortetracycline hydrochloride. Result indicates these antibiotics to be present in amounts guaranteed.⁷ Oxytetracycline Hydrochloride

Feeds Containing Drugs—(Continued)

Manufacturer and Brand	Drug	Found	Guaranteed
General Mills, Inc., Larowe Region			
Larro Poultry Surelift.....	{Chlortetracycline Oxytetracycline	^a	.025 g/lb .025 g/lb
Larro Surebroiler Finisher.....	3-Nitro	.005%	.005%
Larro Surebroiler Finisher 23.....	{Nicarbazin 3-Nitro	.0104% .0042%	.0125% .005%
Larro Surebroiler Starter 26 ^b	{Nicarbazin 3-Nitro	.0101% .0054%	.0125% .005%
Larro Surechick.....	Nicarbazin	.0116%	.0150%
Larro Suregrow Complete "H-E".....	Nicarbazin	.0155%	.01%
Larro Surelift.....	{Chlortetracycline Oxytetracycline	^a	.05 g/lb .05 g/lb
Larro Surepig.....	Arsanilic Acid	.0072%	.01%
Larro Surepoult.....	Sulfaquinoxaline	.0138%	.0175%
Hales & Hunter Co.			
Red Comb Broiler Mash.....	{Nicarbazin.... 3-Nitro	.0135% .007%	.0125% .005%
Red Comb Chick Starter.....	Nicarbazin	.0133%	.0125%
Red Comb Sup-Pel.....	Chlortetracycline	.053 g/lb	.05 g/lb
Red Comb Turkey Grower.....	4-Nitro	.028%	.025%
Harper Feed Mills, Inc.			
Harco Flock Booster Pellets.....	Oxytetracycline	.07 g/lb	.025 g/lb
E. C. & W. L. Hopkins, Inc.			
Granite State Broiler Mash.....	{Nicarbazin Arsanilic Acid	.0078% .0056%	.0125% .0088%
Mansfield Milling Co.			
Money's-Worth High Efficiency Starter.....	Sulfaquinoxaline	.0136%	.0125%
Money's-Worth Turkey Starter.....	Sulfaquinoxaline	.0024% ^c	.0175%
Merrimack Farmers' Exchange, Inc.			
Merrimack Fast-Gro Starter and Broiler.....	{Nicarbazin Arsanilic Acid	.0105% .0086%	.0125% .01%
Ogden Grain Co.			
Hi-Energy Starter & Broiler.....	{Arsanilic Acid Nicarbazin	.0082% .0087%	.01% .0125%
Park & Pollard Co., Inc.			
Hi-Power 22% Broiler Ration.....	{Arsanilic Acid Nicarbazin	.0094% .0138%	.009% .0125%
Hi-Prime Turkey Starter.....			
Lay or Bust All-Mash Grower.....	Sulfaquinoxaline	.014%	.0175%
Lay or Bust T.N.T.....	Nicarbazin	.0089%	.0125%
	{Furazolidone Chlortetracycline	.0051% ^d .05 g/lb	.011% .05 g/lb
Ralston Purina Co.			
Purina Broiler Chow E.....	3-Nitro	.0064%	.005%
Purina Broiler Chow Finisher E.....	{3-Nitro Nicarbazin	.008% .0125%	.005% .0125%
Purina Broiler Chow Starter E.....	{3-Nitro Nicarbazin	.008% .0114%	.005% .0125%
Purina Chek-R-Aid E.....	{Chlortetracycline Furazolidone	.036 g/lb .011%	.05 g/lb .011%
Purina Chick Growena E.....	Nicarbazin	.0093%	.010%
Purina Chick Startena E.....	{3-Nitro Nicarbazin	.0022% .0116%	.0025% .0125%
Purina Super Chick Startena E.....	3-Nitro	.0025%	.0025%
Purina Turkey Fatena E.....	4-Nitro	.033%	.075%
Purina Turkey Growena E.....	4-Nitro	.031%	.025%
Purina Turkey Pre-Starter E.....	Sulfaquinoxaline	.020%	.0175%
Purina Turkey Pre-Starter E.....	Sulfaquinoxaline	.019%	.0175%
Purina Turkey Startena E.....	Sulfaquinoxaline	.018%	.0175%

^a Seriously deficient.^b Chlortetracycline hydrochloride and oxytetracycline hydrochloride were measured as chlortetracycline hydrochloride. Result indicates these antibiotics to be present in amounts guaranteed.^c Deficient in protein.

Feeds Containing Drugs—(Continued)

Manufacturer and Brand	Drug	Found	Guaranteed
Swansea Grain Co.			
Swansea Quality Broiler Ration Super.....	Nitrophenide	.026%	.02%
Swansea Quality Broiler Ration Super.....	Nitrophenide	.025%	.02%
Swansea Quality Broiler Ration Super.....	Nicarbazin	.0114%	.0125%
United Co-Operative Farmers, Inc.			
UCF Super Broiler Mash.....	Nicarbazin	.0125%	.0125%
UCF Super Starter.....	Sulfaquinoxaline	.0155%	.015%
Unity Feeds, Inc.			
Unity Booster-Etts.....	Chlortetracycline	none ⁹	.05 g/lb
Unity Booster-Etts.....	Chlortetracycline	.008 g/lb ¹⁰	.05 g/lb
Unity Booster-Etts.....	Chlortetracycline	.01 g/lb ¹¹	.05 g/lb
Unity Booster-Etts.....	Oxytetracycline	.06 g/lb	.05 g/lb
Unity Broiler Starter.....	Nicarbazin	.0151%	.010%
	3-Nitro	.006%	.005%
Unity Super Starter.....	Nitrophenide.	.0019%	.018%
J. P. Washburn Co.			
Made Right Breeder.....	3-Nitro	.005%	.005%
Made Right Complete Breeder.....	3-Nitro	.006%	.005%
Made Right Growing Feed.....	3-Nitro	.006%	.005%
Made Right High Energy Breeder Mash.....	3-Nitro	.006%	.005%
Made Right High Energy Broiler.....	3-Nitro	.0053%	.012 ¹²
	Sulfanilamide derivative	.022%	
Made Right High Energy Laying Mash.....	3-Nitro	.005%	.005%
Made Right Laying Mash.....	3-Nitro	.005%	.005%
J. K. Webster Co.			
Blue Seal Advance Broiler.....	Nicarbazin	.0095%	0.125%
Blue Seal All-Mash Growing Ration.....	Sulfaquinoxaline	.0128%	.0175%
Blue Seal Chick Starter.....	Nicarbazin	.0129%	.0125%
Blue Seal NFA Furazolidone, Chlortetracycline Mixture.....	Furazolidone	.0115%	.011%
Blue Seal NFA Furazolidone, Chlortetracycline Mixture.....	Chlortetracycline	.065 g/lb	.05 g/lb
	Furazolidone	.0111%	.011%
Blue Seal Turkey Starter.....	Chlortetracycline	.065 g/lb	.05 g/lb
	Sulfaquinoxaline	.016%	.0175%
Wirthmore Grain Co.			
Preferred Starter & Broiler Ration.....	Nitrophenide	.017%	.0125%
Yieldmor Feeds, Inc.			
Yieldmor Hi-Energy Broiler Ration.....	Nicarbazin	.0108%	.0125%
	Arsanilic Acid	.0081%	.0099%

⁹ Misabeled. Contains no chlortetracycline hydrochloride. Contains bacitracin .05 g/lb.¹⁰ Misabeled. Contains chlortetracycline hydrochloride .008 g/lb, bacitracin .027 g/lb.¹¹ Misabeled. Contains chlortetracycline hydrochloride .01 g/lb, bacitracin .027 g/lb.¹² Misabeled. No drug guarantees on label.

Mineral Mixtures

Manufacturer and Brand	Mineral	Found	Guaranteed
Amburgo Co., Inc.			
Ambur-Phos.....	Phosphorus	18.1	17.0
	Calcium	23.6	20.0
	Manganese	1.3	1.3
	Copper	.06	.04
	Cobalt	.012	.01
	Iron	.64	.40
	Iodine	.013	.03
	Zinc	.016	.008
H. J. Baker & Bro.			
Cura-Phos.....	{ Phosphorus	14.1	14.0
	{ Flourine	.37	.5*
Dairy Association Co., Inc.			
Kow-Kare.....	{ Calcium	9.2	6.39
	{ Phosphorus	4.4	3.3
	{ Iodine	.28	.27
	{ Cobalt	.026	.033
	{ Manganese	.12	.08
Eastman Chemical Products, Inc.			
Tecmangam.....	Manganese sulfate	75.7	75.0
Tecmangam.....	Manganese sulfate	75.7	75.0
Dr. Hess Stock Tonic.....	{ Calcium	20.4	15.0
	{ Phosphorus	4.1	3.0
	{ Iodine	.054	.04
	{ Salt	20.3	23.0*
International Minerals & Chemical Corp.			
Beaded Dynafos Dicalcium Phosphate.....	{ Calcium	23.4	21 - 24**
	{ Phosphorus	18.5	18.5
	{ Fluorine	.08	.12*
Beaded Dynafos Dicalcium Phosphate.....	{ Calcium	(1)	21 - 24**
	{ Phosphorus	19.1	18.5
	{ Fluorine	.10	.12*
International Stock Food Corp.			
I-S-F Cattle Special.....	{ Calcium	23.2	16.0
	{ Phosphorus	6.7	6.5
	{ Salt	8.2	10.0*
	{ Iodine	.021	.026
	{ Fluorine	.018	.021*
Limestone Products Corp. of America			
Lime Crest Brand Calcite Flour.....	{ Calcium	33.1	33.0
	{ Magnesium	2.6	2.6*
Lime Crest Brand Calcite Flour.....	{ Calcium	33.3	33.0
	{ Magnesium	2.4	2.6*
Lime Crest Brand Shell-Producer Calcite	{ Calcium	33.0	33.0
Crystals No. 1 Large.....	{ Magnesium	3.0	2.6*
Lime Crest Brand Shell-Producer Calcite	{ Calcium	34.9	33.0
Crystals No. 2 Medium.....	{ Magnesium	3.0	2.6*
Lime Crest Brand Delmanix Trace-Minerals	{ Manganese	6.0	6.0
Pre-Mix.....	{ Iron	2.4	2.0
	{ Copper	.21	.2
	{ Iodine	.12	.12
	{ Cobalt	.026	.02
	{ Calcium	27.0	26.5
Lime Crest Brand MIC No. 8009 Minerals...	{ Calcium	33.4	33.0
	{ Manganese	.24	.2
	{ Iodine	.065	.06

Manufacturer and Brand	Mineral	Found	Guaranteed
Morton Salt Co.			
Morton T-M (Trace Mineralized Salt)	Salt	97.0	96.8 - 99.2**
	Manganese	.35	.25
	Iron	.25	.16
	Copper	.046	.033
	Cobalt	.012	.010
	Iodine	.014	.007
	Zinc	.008	.005
Watkins Salt Co.			
Watkins Trace Mineral Salt	Cobalt	.011	.01
	Iodine . . .	.008	.007
	Manganese	.36	.15
	Iron	.15	.078
	Copper	.015	.015
	Zinc	.008	.005
	Salt	99.0	98.5
Hittmeyer Laboratories, Inc.			
Tra Min No. 1	Manganese	5.7	6.0
	Iodine	.13	.12
	Copper	.22	.20
	Cobalt	.047	.04
	Iron	2.6	2.5
	Calcium	31.3	26.0

* Maximum guarantee.

** Minimum and maximum guarantees.

(1) Not determined.

Drugs and Drug Mixtures

Manufacturer and Brand	Drug	Found	Guaranteed
Abbott Laboratories Pro-Gen Sodium.....	Sodium arsenilate	100.0%	—
American Cyanamid Co. Aurofac—Vitamin B ₁₂ Mixture..... Aurofac 2A..... Aurofac 2A..... Aurofac 2A..... Aurofac 2A..... Aurofac 2A..... Aurofac 2A..... Aurofac 10..... Enheptin-A Premix 15%..... Megasul-A..... Megasul-A9.....	Chlortetracycline hydrochloride Chlortetracycline hydrochloride Chlortetracycline hydrochloride Chlortetracycline hydrochloride Chlortetracycline hydrochloride Chlortetracycline hydrochloride Chlortetracycline hydrochloride Chlortetracycline hydrochloride Chlortetracycline hydrochloride Enheptin-A { Nitrophenide Arsanilic acid Nitrophenide Arsanilic acid	2.2 g/lb 3.7 g/lb 3.0 g/lb 5.3 g/lb 5.2 g/lb 3.7 g/lb 3.7 g/lb 3.7 g/lb 10.9 g/lb 15.0% 25.6% 12.5% 28.4% 9.1%	1.8 g/lb 3.6 g/lb 3.6 g/lb 3.6 g/lb 3.6 g/lb 3.6 g/lb 3.6 g/lb 3.6 g/lb 10.0 g/lb 15.0% 25.0% 12.5% 25.0% 9.0%
Chemo Puro Manufacturing Co. 3-Nitro-4-Hydroxyphenylarsonic acid.....	3-Nitro-4-Hydroxyphenylarsonic acid	25.6%	25.6%
Commercial Solvents Corp. Baciform-5 Antibiotic Feed Supplement.. Baciform-25 Antibiotic Feed Supplement.. CSC No. 51 Antibiotic and Vitamin B ₁₂ Feed Supplement..... Penbac X Antibiotic Feed Supplement.....	Bacitracin Bacitracin Procaine penicillin Procaine penicillin Becitracin	5.3 g/lb 22.7 g/lb 2.0 g/lb 2.2 g/lb 5.3 g/lb	5.0 g/lb 25.0 g/lb 2.0 g/lb 2.0 g/lb 5.0 g/lb
E. I. du Pont de Nemours & Co. DL-Methionine.....	DL-Methionine	98.1%	98.0%
Hess & Clark, Inc. MF 180..... MF 180..... MF 180..... MF 180.....	Furazolidone Furazolidone Furazolidone Furazolidone	11.0% 11.0% 11.0% 11.6%	11.0% 11.0% 11.0% 11.0%
Merck & Co., Inc. Nicarbazin Mixture 25%..... Nicarbazin Mixture 25%..... Nicarbazin Mixture 25%..... Nicarbazin Mixture 25%..... Pro-Pen "4" Antibiotic Feed Supplement.. Pro-Pen with Vitamin B ₁₂ and Anti- biotic Feed Supplement..... Sulfaquinoxaline 25%..... Sulfaquinoxaline 25%..... Sulfaquinoxaline.....	Nicarbazin Nicarbazin Nicarbazin Nicarbazin Procaine penicillin Procaine penicillin Sulfaquinoxaline Sulfaquinoxaline Sulfaquinoxaline	24.2% 25.2% 25.3% 24.2% 4.0 g/lb 2.9 g/lb 26.0% 25.0% 99.5%	25.0% 25.0% 25.0% 25.0% 4.0 g/lb 2.0 g/lb 25.0% 25.0% —
Chas. Pfizer & Co. Antibiotic Feed Supplement Source of Penicillin..... Oxytetracycline (Terramycin)..... Hydrochloride Animal Mix..... TM 1M3 Antibiotic and Vitamin B- Feed Supplement..... TM-5 Oxytetracycline (Terramycin) Hydrochloride Animal Mix.....	Procaine penicillin Oxytetracycline hydrochloride Oxytetracycline hydrochloride Oxytetracycline hydrochloride	50.0 g/lb 11.0 g/lb 1.0 g/lb 5.2 g/lb	50.0 g/lb 10.0 g/lb 1.0 g/lb 5.0 g/lb
Rockland Chemical Co., Inc. Rockland 25% S.O. Premix..... Rockland 25% S.O. Premix.....	Sulfaquinoxaline Sulfaquinoxaline	*14.0% 27.8%	25.0% 25.0%
Dr. Salsbury's Laboratories 3-Nitro Powder..... Histostat.....	3-Nitro-4-Hydroxyphenylarsonic acid 4-Nitrophenylarsonic acid	10.2% 27.0%	10.0% 25.0%

* Seriously deficient in sulfaquinoxaline. Lot recalled and replaced by manufacturer. New lot was found to be as guaranteed.

Oat Products

Manufacturer and Brand	Protein		Fat		Fiber		Results of Microscopic Examination
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	
Beacon Milling Co., Inc. Beacon Ground Oats.....	10.7	—	—	—	—	—	As represented
Borden Grain Co. Ground Oats.....	12.1	—	—	—	10.8	—	As represented
Boyd Mills, Inc. Pulverized Oats..... Pulverized White Oats.....	9.5 9.9	— —	— 3.9	— —	20.0 18.9	— —	Mixed screenings, Mixed screenings ¹
Canadian Grain Products, Ltd. Ground Oats..... Canadian Ground Mixed Feed Oats.....	9.8 9.9	— —	— 3.8	— —	18.0 18.9	— —	Grain screenings Mixed screenings ¹
Chas. M. Cox Co. Wirthmore Ground Oats..... Wirthmore Ground Oats.....	13.1 11.3	— —	— —	— —	— 10.4	— —	As represented As represented
Cunningham Grain Co. Ground Oats.....	10.6	—	—	—	12.5	—	As represented
Dominion Grain & Feed Co. Ground Mixed Feed Oats.....	9.3	—	4.1	—	19.1	—	Mixed screenings
Doughboy Industries, Inc. Pulverized White Oats.....	10.3	10.0	—	—	16.6	15.0	Fiber excessive. Grain screenings.
Pulverized White Oats..... Pulverized White Oats.....	10.1 10.3	10.0 10.0	4.1 3.5	2.5 2.5	14.1 14.3	15.0 15.0	Grain screenings, or a mixture of ground oats and mixed screenings
J. L. Dunnell & Son Ground Oats.....	10.9	—	—	—	9.4	—	As represented
Eastern Grain Co. Ground Oats.....	13.2	—	—	—	9.4	—	As represented

¹Case referred to Federal Food and Drug Administration.

Oat Products—(Continued)

Manufacturer and Brand	Protein		Fat		Fiber		Results of Microscopic Examination
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed	
Fruen Milling Co.							
Mixers' Pulverized White Oats.....	9.5	10.0	2.9	2.5	15.3	15.0	Grain screenings
Mixers' Pulverized White Oats.....	9.5	10.0	3.1	2.5	15.4	15.0	Grain screenings
Mixers' Pulverized White Oats.....	10.2	10.0	—	—	15.2	15.0	Grain screenings, or a mixture of ground oats and grain or mixed screenings.
Mixers' Coarse Ground White Oats.....	10.6	10.0	3.0	2.5	12.2	15.0	Grain screenings
General Mills, Inc.							
Pulverized Oats.....	14.2	12.0	—	—	—	—	As represented
Pulverized White Oats.....	13.4	12.0	5.4	4.5	11.4	13.0	As represented
Pulverized White Oats.....	14.0	12.0	4.7	4.5	12.0	13.0	As represented
Pulverized White Oats.....	12.9	12.0	—	—	13.2	13.0	Grain screenings
Pulverized White Oats.....	13.8	12.0	—	—	—	—	As represented
Pulverized White Oats.....	14.2	12.0	5.7	4.5	12.9	13.0	Grain screenings or a mixture of ground oats and mixed screenings
Pulverized White Oats.....	14.1	12.0	6.1	4.5	13.5	13.0	As represented
Pulverized White Oats.....	13.3	12.0	5.4	4.5	11.4	13.0	As represented
Pulverized White Oats.....	11.9	12.0	5.7	4.5	13.7	13.0	As represented
Pulverized White Oats.....	13.2	12.0	4.1	4.5	14.4	13.0	As represented
Pulverized White Oats.....	15.2	12.0	—	—	—	—	As represented
Pulverized White Oats.....	15.9	12.0	5.7	4.5	8.4	13.0	As represented
Medium Ground White Oats.....	12.8	12.0	—	—	12.7	13.0	As represented
Medium Ground White Oats.....	14.0	12.0	4.8	4.5	11.4	13.0	As represented
Medium Ground White Oats.....	12.8	12.0	4.8	4.5	11.9	13.0	As represented
Medium Ground White Oats.....	14.0	12.0	4.6	4.5	12.0	13.0	As represented
Coarse Ground Oats.....	12.9	12.0	5.0	4.5	10.7	13.0	As represented
D. Harbeck & Son							
Ground Oats.....	12.5	—	—	—	9.5	—	As represented
E. C. & W. L. Hopkins, Inc.							
Pulverized Oats.....	9.0	—	—	—	15.2	—	Grain screenings
Ground Oats.....	10.8	—	—	—	8.9	—	As represented

¹Case referred to Federal Food and Drug Administration.

Oat Products—(Continued)

Manufacturer and Brand	Protein		Fat		Fiber		Results of Microscopic Examination
	Found	Guar-anteed	Found	Guar-anteed	Found	Guar-anteed	
Mansfield Milling Co. Ground Oats.....	10.9	—	—	—	—	—	As represented
Ogilvie Flour Mills Co., Ltd. Pulverized Canadian White Oats.....	9.4	—	2.6	—	13.7	—	Grain screenings
Pulverized Mixed Feed Oats.....	9.8	—	—	—	15.3	—	Mixed screenings ¹
Pulverized Mixed Feed Oats.....	9.2	—	—	—	16.35	—	
Quaker Oats Co. Peterborough Oat Mill By-Product.....	4.0	2.5	—	—	32.2	33.0	As represented
Peterborough Oat Mill By-Product.....	3.7	2.5	—	—	30.6	33.0	As represented
Peterborough Oat Mill By-Product.....	3.7	2.5	—	—	30.3	33.0	As represented
Peterborough Oat Mill By-Product.....	3.6	2.5	—	—	31.8	33.0	As represented
Peterborough Oat Mill By-Product.....	3.3	2.5	—	—	31.9	33.0	As represented
Ralston Purina Co. Crimped Whole Oats.....	10.0	11.5	4.2	4.0	9.5	12.0	As represented
United Co-Operative Farmers Inc. UCF Ground Oats.....	10.9	—	—	—	—	—	As represented
UCF Ground Oats.....	9.6	—	—	—	11.8	—	As represented
C. P. Washburn Co. Ground Oats.....	13.9	—	—	—	9.5	—	As represented
H. K. Webster Co. Ground Oats.....	11.5	—	—	—	11.9	—	As represented
Ground Oats.....	11.5	—	—	—	—	—	As represented

¹Case referred to Federal Food and Drug Administration.

Alfalfa Meals

Manufacturer and Brand	Protein		Fiber		Carotene Milligrams per Pound	U.S.P. Units Vitamin A per Pound (Vitamin A Equivalent from Carotene)
	Found	Guar- anteed	Found	Guar- anteed		
Agri-Tech, Inc. Leaf Specules.....	21.2	20	19.8	20	43.6	72,680
Specules.....	18.3 18.1	17 17	24.6 26.2	27 27	66.7 38.6	111,190 64,360
Spec-Meal.....	17.6 a	20	23.9	25	61.2	102,020
Calvert Milling Co. 17% Dehydrated Alfalfa Meal.....	17.8	17	278	27	37.2	62,010
Erie Alfalfa Mills, Inc. Alfalfa Meal.....	16.8	17	33.1 b	27	8.8	14,670
Farm Bureau Cooperative Assn., Inc. Dehydrated Alfalfa Meal.....	{22.0 20.3	17 17	24.2 21.4	27 27	70.4 69.9	117,360 116,520
Dehydrated Alfalfa Meal with 1% Animal Fat.....	18.5	17	23.3	27	37.2	62,010
Huss Alfalfa Mills, Inc. Dehydrated Alfalfa Meal.....	{17.3 16.1 18.2	17 17 17	27.0 26.8 27.0	27 27 27	26.2 38.1 37.2	43,680 63,510 62,022
Keystone Chemurgic Corp. Solvent Extracted 20% Dehydrated Alfalfa Meal Residue.....	21.3	20	18.9	20	10.0	16,670
Keystone Dehydrators Keystone Super-Green Dehydrated Alfalfa Meal.....	{18.5 19.4 18.3	17 17 17	29.5 b 27.0 23.6	27 27 27	49.9 54.9 46.7	83,180 91,520 77,850
	{18.7 19.0 18.3	17 17 17	26.7 21.7 28.3	27 27 27	31.3 27.5 23.6	52,180 62,440 39,340

Manufacturer and Brand	Protein		Fiber		Carotene Milligrams per Pound	I. S. P. Units Vitamin A per Pound (Vitamin A Equivalent from Carotene)
	Found	Guar- anteed	Found	Guar- anteed		
National Dehydrating & Milling Co.						
Jack Rabbit 20% Protein Dehydrated Alfalfa Leaf Granules.....	19.1	20	18.0	18	83.8	139,690
Jack Rabbit 17% Protein Dehydrated Alfalfa Granules.....	17.0	17	27.3	27	47.6	79,350
Jack Rabbit 17% Dehydrated Alfalfa Meal.....	{18.2 17.7	{17 17	{24.0 25.8	{27 27	{48.1 36.3	{80,180 60,510
Schoenck Farms, Inc.						
Super-Green Dehydrated Alfalfa Meal.....	{17.0 18.6	{17 17	{25.2 24.5	{27 27	{31.8 47.6	{53,010 79,350
Shofstall Milling Co.						
Dehydrated Alfalfa Meal 17%.....	20.1	17	25.8	27	30.9	51,510
W. J. Small Co.						
Small's 17% Dehydrated Alfalfa Meal with 1% Animal Fat.....	{17.0 18.9 17.7	{17 17 17	{24.6 24.9 24.8	{27 27 27	{37.7 33.6 32.7	{62,840 56,010 54,510

^a Deficient in protein.

^b Excessive fiber.

Feed Supplements, Oils, and Vitamin and Drug Mixtures

Manufacturer and Brand		Found	Guaranteed
Alaska Fish Oil Extractors, Inc. Vitamin A & D Feeding Oil.....	Vitamin A	2,200 U.S.P. units/g	3,000 U.S.P. units/g
American Cyanamid Co. Choline Chloride 25%.....	Choline Chloride	25.0%	25.0%
S. F. Mix 34.....	{ Riboflavin { Pantothenic acid { Niacin	2,052 mg/lb 1,770 mg/lb 2,140 mg/lb	2,000 mg/lb 2,000 mg/lb 2,000 mg/lb
Borden Co., Special Products Div. Borden's MF-FL Blend 30D.....	{ Procaine Penicillin { Pantothenic Acid { Choline Chloride { Riboflavin { Niacin { Betaine Chloride	.036 g/lb 89. mg/lb 1,000. mg/lb 75.2 mg/lb 203. mg/lb 5,450. mg/lb	.05 g/lb 80. mg/lb 1,000. mg/lb 45. mg/lb 140. mg/lb 5,000. mg/lb
Flaydry.....	{ Riboflavin { Betaine Chloride	27. mg/lb 4,300. mg/lb	27. mg/lb 4,000. mg/lb
Flaydry Farmacto Poultry Feed Supplement.....	{ Riboflavin { Betaine Chloride	32. mg/lb 4,800. mg/lb	27. mg/lb 4,800. mg/lb
Pet-Pro.....	{ Vitamin A { Riboflavin { Niacin { Thiamin Hydrochloride	155,270 U.S.P. units/lb 8.0 mg/lb 111.7 mg/lb 15.1 mg/lb	85,000 U.S.P. units/lb 6 mg/lb 72 mg/lb 9 mg/lb
Commercial Solvents Corp. B.Y-21 Riboflavin Supplement.....	Riboflavin	3,800 mg/lb	3,630 mg/lb
B.Y-45 Vitamin Feed Supplement.....	Niacin	660 mg/lb	500 mg/lb
B.Y-45 Vitamin Feed Supplement.....	{ Niacin { Vitamin B ₁₂	550 mg/lb .20 mg/lb	500 mg/lb .15 mg/lb
B.Y-100 Dried Grain & Cane Syrup Fermentation Solubles (Butyl).....	Riboflavin	55.0 mg/lb	45.4 mg/lb
B.Y-100 Dried Grain & Cane Syrup Fermentation Solubles (Butyl).....	Riboflavin	63.0 mg/lb	45.4 mg/lb
B.Y-N-100 Dried Grain & Cane Syrup Fermentation Solubles.....	{ Riboflavin { Niacin	59.2 mg/lb 425 mg/lb	45.4 mg/lb 500 mg/lb

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand	Found	Guaranteed
Commercial Solvents Corp.—(Continued) B.Y.-N-100 Dried Grain & Cane Syrup Fermentation Solubles.....	56 500	45.4 500
B.Y.-250 Dried Grain & Cane Syrup Fermentation Solubles (Butyl).....	220	113.5
B.Y.-353 Riboflavin Supplement.....	17,120	16,000
B.Y.-500 Dried Grain & Cane Syrup Fermentation Solubles (Butyl).....	288	227
CSC Choline Supplement 25.....	22.4%	25%
CSC Choline Supplement 25.....	27.2%	25%
CSC No. 51 Antibiotic and Vitamin B ₁₂ Supplement.....	1.7 2.4	3 2
Proform-6 Vitamin B ₁₂ Supplement.....	7.5	6
Dawe's Laboratories, Inc. Dawe's Broiler Base.....	56,750 U.S.P. units/lb 80 149 275 11,700 .30 .190%	80,000 U.S.P. units/lb 80 120 240 10,000 .4 .198%
Dawe's Fermentation Supplement 100.....	46.0	45.4
Dawe's Fermentation Supplement 100.....	51.3	45.4
Dawe's Vitamelk (D.V. Base).....	14,500 U.S.P. units/lb 32.0 113.5 5,000 185 .042	14,500 U.S.P. units/lb 31.75 66 3,500 180 .03
Dawe's Vitamelk (D. V. Base).....	9,650 U.S.P. units/lb 40.5 62 3,600 200	14,500 U.S.P. units/lb 31.75 66 3,500 180

*Seriously deficient.

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand		Found	Guaranteed
Dawe's Laboratories, Inc.—(Continued) Dawe's Vitamelk (D. V. Base)	Vitamin A	22,130 U.S.P. units/lb	14,500 U.S.P. units/lb
	Riboflavin	36.5 mg./lb	31.75 mg./lb
	Pantothenic Acid	62 mg./lb	66 mg./lb
	Choline Chloride	4,550 mg./lb	3,500 mg./lb
Dawe's Vitamelk Ruminant Type	Niacin	200 mg./lb	180 mg./lb
	Procaine Penicillin	.03 g./lb	.03 g./lb
	Vitamin A	29,510 U.S.P. units/lb	50,000 U.S.P. units/lb
	Riboflavin	22.7 mg./lb	15.4 mg./lb
Dawe's Vitamelk Swine Type	Pantothenic Acid	15 mg./lb	16.39 mg./lb
	Choline Chloride	2,475 mg./lb	1,816 mg./lb
	Niacin	128 mg./lb	90 mg./lb
	Vitamin A	none	20,000 U.S.P. units/lb
E. F. Drew & Co., Inc. Flex-A-Mix 6000A #1200D Riboflavin Supplement	Riboflavin	45.1 mg./lb	40 mg./lb
	Pantothenic Acid	169 mg./lb	160 mg./lb
	Choline Chloride	4,840 mg./lb	4,000 mg./lb
	Niacin	475 mg./lb	400 mg./lb
Gorton's of Gloucester, Inc. Gorton's A & D Feeding Oil	Procaine Penicillin	.061 g./lb	.08 g./lb
	Oxytetracycline Hydrochloride	.04 g./lb *	.08 g./lb
	Vitamin A	5,830 U.S.P. units/g	6,000 U.S.P. units/g
	Riboflavin	18,850 mg./lb	(no guarantee)
Gorton's Al-Elend "Senior"	Vitamin A	6,000 U.S.P. units/g	5,000 U.S.P. units/g
	Vitamin A	72,640 U.S.P. units/lb	50,000 U.S.P. units/lb
	Carotene	16.9 mg./lb	12 mg./lb
	Total Vitamin A activity	90,810 U.S.P. units/lb	70,000 U.S.P. units/lb
Gorton's Al-Blend "Junior"	Riboflavin	33.2 mg./lb	14 mg./lb
	Niacin	216 mg./lb	200 mg./lb
	Vitamin A	54,480 U.S.P. units/lb	30,000 U.S.P. units/lb
	Carotene	18.9 mg./lb	9 mg./lb
*Seriously deficient.	Total Vitamin A activity	85,990 U.S.P. units/lb	45,000 U.S.P. units/lb
	Riboflavin	35.6 mg./lb	18 mg./lb
	Niacin	248 mg./lb	200 mg./lb

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand	Found	Guaranteed
Gorton's of Gloucester, Inc.—(Continued)		
Gorton's Layer Blend.....	(Vitamin A Carotene Total Vitamin A activity Riboflavin Niacin	124,850 U.S.P. units/lb 18.1 mg/lb 155,077 U.S.P. units/lb 31.0 mg/lb 492 mg/lb
Gorton's Mac-A-Tie Blend.....	(Vitamin A Riboflavin Niacin	113,500 U.S.P. units/lb 79 mg/lb 487 mg/lb
Gorton's Turkey Blend.....	(Vitamin A Carotene Total Vitamin A activity Riboflavin Niacin Calcium Pantothenate	78,310 U.S.P. units/lb 8.8 mg/lb 91,170 U.S.P. units/lb 59 mg/lb 444 mg/lb 54 mg/lb
Haffnerreffer & Co., Inc.		
Haffnerreffer Brewers' Dried Yeast.....	Riboflavin Riboflavin	11.5 mg/lb 10.1 mg/lb
Illinois Yeast Co.		
Yeast Glow Cultured Yeast.....	Riboflavin Choline Chloride Niacin Pantothenic Acid	34 mg/lb 376 mg/lb 156 mg/lb* 28 mg/lb
Marden-Wild Corp.		
Marden's Vitamin A & D Feeding Oil 3001D 1500A.....	Vitamin A Vitamin A	1,340 U.S.P. units/g 1,150 U.S.P. units/g
Merck & Co., Inc.		
Toy Mixture of Choline Chloride 25%.....	Choline Chloride Niacin Vitamin B ₁₂ activity	25.0% 64.4% 6.0 mg/lb
New England By-Products Corp.		
Newhyco Vitalizer.....	Vitamin A	50,000 U.S.P. units/lb

*Seriously deficient.

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand		Found	Guaranteed
New York Quinine & Chemical Works, Inc.	Riboflavin	3,840	4,000
	{Riboflavin	1,860	2,000
	{Calcium Pantothenate	4,089	4,000
	{Niacin	12,600	9,000
Vitamin Mix Q-103	{Choline Chloride	11,960	10,000
Nopco Chemical Co. Soluble Niacin Premix	Niacin	321,770	313,400
	{Vitamin A	569,800 U.S.P. units/lb	500,000 U.S.P. units/lb
	{Riboflavin	410	400
	{Niacin	4,200	4,000
Nopco-Pak Breeder Premix No. 1	{Calcium Pantothenate	551	600
	{Choline Chloride	10,000	10,000
Nopco-Pak Mix No. 1—Breeder Premix	{Vitamin A	539,100 U.S.P. units/lb	400,000 U.S.P. units/lb
	{Riboflavin	630	600
	{Niacin	4,000	4,000
	{Calcium Pantothenate	617	600
Nopco-Pak Broiler Premix No. 3	{Vitamin B ₁₂ activity	.6	.6
Nopco-Pak Broiler Premix No. 3	{Vitamin A	350,200 U.S.P. units/lb	300,000 U.S.P. units/lb
	{Riboflavin	300	300
	{Niacin	4,000	4,000
	{Calcium Pantothenate	474	500
Nopco-Pak Broiler Premix No. 3	{Choline Chloride	20,890	20,000
	{Procaine Penicillin	.95	.8
Nopco-Pak Broiler Premix No. 3	{Vitamin A	316,670 U.S.P. units/lb	300,000 U.S.P. units/lb
	{Riboflavin	332	300
	{Niacin	4,640	4,000
	{Calcium Pantothenate	600	500
Nopco-Pak Broiler Premix No. 3	{Choline Chloride	20,700	20,000
	{Procaine Penicillin	.84	.8
	{Arsanilic Acid	3.65%	3.616%

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand		Found	Guaranteed
Nopco Chemical Co.—(Continued)			
Nopco-Pak Premix No. 4—Starter.....	<div> { Vitamin A Riboflavin Niacin Calcium Pantothenate Choline Chloride Procaine Penicillin </div>	<div> 350,200 U.S.P. units/lb 300 mg/lb 4,000 mg/lb 570 mg/lb 20,000 mg/lb .55 g/lb </div>	<div> 300,000 U.S.P. units/lb 300 mg/lb 4,000 mg/lb 600 mg/lb 20,000 mg/lb .8 g/lb </div>
Nopco-Pack Premix No. 4—Starter.....	<div> { Vitamin A Riboflavin Niacin Calcium Pantothenate Choline Chloride Procaine Penicillin Vitamin B₁₂ activity </div>	<div> 330,650 U.S.P. units/lb 408 mg/lb 3,875 mg/lb 817 mg/lb 20,200 mg/lb .8 g/lb .2 mg/lb </div>	<div> 300,000 U.S.P. units/lb 400 mg/lb 4,000 mg/lb 600 mg/lb 20,000 mg/lb .8 g/lb .2 gm/lb </div>
Silmo Chemical Corp.			
Silmo Vitamin A and D Oil.....	Vitamin A	1,670 U.S.P. units/g	2,250 U.S.P. units/g
Stabilized Vitamins, Inc.			
Permadyr Sealed in Vitamin A and D Product in Powder Form.....	Vitamin A	14,500 U.S.P. units/g	10,000 U.S.P. units/g
Permadyr Sealed in Vitamin A and D Product in Powder Form.....	Vitamin A	10,750 U.S.P. units/g	10,000 U.S.P. units/g
Permadyr Sealed in Vitamin A and D Product in Powder Form.....	Vitamin A	12,300 U.S.P. units/g	10,000 U.S.P. units/g
Sterwin Chemicals, Inc.			
Type 131 Vitamin Concentrate.....	<div> { Riboflavin Calcium Pantothenate Niacin Choline Chloride </div>	<div> 37,600 mg/lb 15,890 mg/lb 7,800 mg/lb 46,310 mg/lb </div>	<div> 36,500 mg/lb 12,000 mg/lb 6,000 mg/lb 45,300 mg/lb </div>
Type 132 Vitamin Concentrate.....	<div> { Riboflavin Calcium Pantothenate </div>	<div> 16,000 mg/lb 23,610 mg/lb </div>	<div> 15,000 mg/lb 20,000 mg/lb </div>

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand		Found	Guaranteed
U. S. Industrial Chemicals Co. USI 25% Choline Chloride Dry Mix CH-25..... USI Brand Niacin U.S. P.....	Choline Chloride Niacin	24.0% 98.6%	24.0% (no guarantee)
Western Condensing Co. Peebles' M-N-C..... Peebles' M-N-C..... Peebles' M-N-C.....	Riboflavin Riboflavin Riboflavin Riboflavin	25.3 38 24	mg./lb mg./lb mg./lb mg./lb
Whitmoyer Laboratories, Inc. Clo-Meal.....	(Riboflavin Pantothenic Acid Niacin Choline Chloride	115 100 816 5,930	mg./lb mg./lb mg./lb mg./lb
Clo-Meal.....	(Riboflavin Pantothenic Acid Niacin Choline Chloride	107 69 747 5,700	mg./lb mg./lb mg./lb mg./lb
Clo-Meal.....	(Riboflavin Pantothenic acid Niacin Choline chloride	82 58 980 6,500	mg./lb mg./lb mg./lb mg./lb
Dri-Col 5,000A..... Dri-Col 3,000A.....	Vitamin A Vitamin A	1,440 U.S.P. units/g.* 4,000 U.S.P. units/g.	5,000 U.S.P. units/g 3,000 U.S.P. units/g
Flav-A-Dee.....	(Vitamin A Riboflavin Calcium pantothenate Niacin Choline chloride	140,740 U.S.P. units/lb 100 mg./lb 24 mg./lb* 738 mg./lb 8,300 mg./lb	100,000 U.S.P. units/lb 100 mg./lb 100 mg./lb 700 mg./lb 6,000 mg./lb
Flav-A-Dee.....	(Riboflavin Pantothenic acid Niacin Choline chloride	129,400 U.S.P. units/lb 113 mg./lb 62 mg./lb 1,065 mg./lb 7,000 mg./lb	100,000 U.S.P. units/lb 100 mg./lb 100 mg./lb 700 mg./lb 6,000 mg./lb

*Seriously deficient.

Whitmoyer Laboratories, Inc. — (Continued)

Whit-Vim Custom Mix Vitamin Mix No. 2.....	{ Vitamin A Riboflavin Calcium pantothenate Niacin	590,200 U.S.P. units/lb 533 mg/lb 272 mg/lb * 4,350 mg/lb	500,000 U.S.P. units/lb 400 mg/lb 600 mg/lb 4,000 mg/lb
Whit-Vim Custom Mix Vitamin Mix No. 2.....	{ Vitamin A Riboflavin Calcium Pantothenate Niacin	716,280 U.S.P. units/lb 426 mg/lb 435 mg/lb 50 mg/lb *	500,000 U.S.P. units/lb 400 mg/lb 600 mg/lb 4,000 mg/lb
Vitamin Pre-Mix No. 2.....	{ Riboflavin Calcium Pantothenate Niacin	1,900 mg/lb 2,370 mg/lb 19,140 mg/lb	2,000 mg/lb 3,000 mg/lb 20,000 mg/lb
Whitmoyer Quality 8000-A Vitamin A Feeding Oil.....	Vitamin A	8,500 U.S.P. units/g	8,000 U.S.P. units/g
Whitmoyer Quality 300D-2250A Cod Liver Oil Concentrate.....	Vitamin A	2,310 U.S.P. units/g	2,250 U.S.P. units/g
Whitmoyer Quality 300D-2250A Cod Liver Oil Concentrate.....	Vitamin A	2,125 U.S.P. units/g	2,250 U.S.P. units/g
Whitmoyer Quality 300D-1500A Cod Liver Oil Concentrate.....	Vitamin A	1,630 U.S.P. units/g	1,500 U.S.P. units/g
Whitmoyer Quality 300D-1500A Cod Liver Oil Concentrate.....	Vitamin A	1,560 U.S.P. units/g	1,500 U.S.P. units/g
Whitmoyer Quality 300D-1500A Cod Liver Oil Concentrate.....	Vitamin A	1,290 U.S.P. units/g	1,500 U.S.P. units/g

*Seriously deficient.

Directory of Manufacturers who Registered Feeds for Sale in Massachusetts in 1957

Acme-Evans Co., Inc., 902 West Washington Ave., Indianapolis 9, Ind.
 L. P. Adams Co., 484 Housatonic St., Dalton, Mass.
 Agri-Tech, Inc., 1125 Board of Trade Bldg., Kansas City, Mo.
 Ajax Dog Food Co., 49 Pine St., Dedham, Mass.
 Albers Milling Co., 5045 Wilshire Blvd., Los Angeles 36, Cal.
 Allied Mills, Inc., Chicago, Ill.
 Amburgo Co., Inc., 1315 Walnut St., Philadelphia 7, Penn.
 American Agricultural Chemical Co., 50 Church St., New York 7, N. Y.
 American Crystal Sugar Co., 600 Boston Bldg., Denver, Col.
 American Cyanamid Co., Fine Chemicals Div., P. O. Box 672, Princeton, N. J.
 American Maize-Products Co., 250 Park Ave., New York 17, N. Y.
 Anheuser-Busch, Inc., 721 Pestalozzi St., St. Louis 18, Mo.
 Arcady Farms Milling Co., 500 West 138th St., Chicago 27, Ill.
 Archer-Daniels-Midland Co., Linseed Oil Meal Dept., P. P. Box 839, Minneapolis 2, Minn.
 Archer-Daniels-Midland Co., Soybean Oil Meal Dept., 700 Investors Bldg., Minneapolis, Minn.
 Astrol Products, Inc., 57-59 Commerce St., Brooklyn 31, N. Y.
 Atlantic Processing Co., P. O. Drawer 248, Amagansett, N. Y.

B & W Canning Co., Inc., P. O. Box 98, Groveland, Florida
 Edward R. Bacon Grain Co., 177 Milk St., Boston 9, Mass.
 E. W. Bailey & Co., Inc., Montpelier, Vt.
 H. J. Baker & Bro., 600 Fifth Ave., New York 20, N. Y.
 Barber & Bennett, Inc., Arch & Church Sts., Albany, N. Y.
 Battle Creek Dog Food Co., 60 East State St., Battle Creek, Mich.
 Beacon Milling Co., Inc., Cayuga, N. Y. U
 Berkman Grain Co., North Franklin, Conn.
 Best Dog Food Co., 447 Timpson Place, Bronx 55, N. Y.
 Best Foods, Inc., 1442 Marine Trust Bldg., Buffalo, N. Y.
 Blatchford Calf Meal Co., 2-26 East Madison St., Waukegan, Ill.
 Bonavista Fish Meals and Oils Ltd., Hill O'Chips, St. John's Newfoundland
 Bordon Co., Special Products Div., 350 Madison Ave., New York 17, N. Y.
 Bordon Grain Co., 700 West Water St., Taunton, Mass.
 Borden's Soy Processing Co., Div. of the Borden Co., Kankakee, Ill.
 C. W. Brister & Son, 195-209 North St., Auburn, N. Y.
 Brown-Forman Distillers Corp., 1908 Howard St., Louisville, KYy.
 Buckeye Cellulose Corp., 301 East Sixth St., Cincinnati, Ohio

Canada Linseed Oil Mills, Ltd., 2215 Notre Dame St., East, Montreal 24, Que., Canada
 Canada Starch Co., Ltd., 1940 Sun Life Bldg., Montreal, Que., Canada
 Cargill, Inc., 200 Grain Exchange Bldg., Minneapolis 15, Minn.
 Carling Brewing Co., 143 Worcester St., Natick, Mass.
 Central Soya Co., Inc., 300 Fort Wayne Bank Bldg., Fort Wayne 2, Ind.
 Chemo Puro Manufacturing Corp., Newark 5, N. J.
 Citrus Feed Co., P. O. Box 513, Lakeland, Florida
 Clinton Corn Processing Co., Clinton, Iowa
 Clyde Milling Corp., Clyde, N. Y.
 Colby Cooperative Starch Co., Box 162, Caribou, Maine
 Commercial Solvents Corp., 1331 South First St., Terre Haute, Ind.
 Community Service, Inc., Canaan, Conn.
 Connecticut Bi-Products, Hop River Road, Columbia, Conn.
 Consolidated Products Co., 119 North Washington Ave., Danville, Ill.
 Consolidated Rendering Co., 178 Atlantic Ave., Boston 10, Mass.
 Corn Products Refining Co., 17 Battery Place, New York 4, N. Y.
 Courcy & Sons Grain Co., Taunton, Mass.
 Cover Grain & Feed Co., 150 Middle St., Lowell, Mass.
 Chas. M. Cox Co., 177 Milk St., Boston 9, Mass.

Dairy Association Co., Inc., Lyndonville, Vt.
 Dawe's Laboratories, Inc., 4800 South Richard St., Chicago 32, Ill.
 Danwood Farms, Smithfield Road, Amenia, N. Y.

- Dean & Lee, Chemung St., Horseheads, N. Y.
 Decatur Milling Co., Inc., 717 North Union St., Decatur, Ill.
 Delaware Mills, Inc., Front St., Deposit, N. Y.
 Delphos Grain & Soya Products Co., South Jefferson St., Delphos, Ohio
 F. Diehl & Son, Inc., 180 Linden St., Wellesley 81, Mass.
 Dietrich & Gambrill, Inc., South Carroll St., Frederick, Md.
 Domestic Concentrates, Inc., 25 Broad St., New York 4, N. Y.
 Dougherty Feed Co., Inc., Willow St., Louisville, Ohio
 John C. Dow Co., 40-44 Prospect St., Gloucester, Mass.
 Doyle Packing Co., Inc., of N. J., 165 Branchport Ave., Long Branch, N. J.
 Drackett Products Co., 5020 Spring Grove Ave., Cincinnati 32, Ohio
 E. I. du Pont de Nemours & Co., Wilmington, Del.
 Eastern States Farmers' Exchange, Inc., 26 Central St., West Springfield, Mass.
 Eastman Chemical Products, Inc., Kingsport, Tenn.
 Eckhart Milling Co., 1300 West Carroll Ave., Chicago, Ill.
 Elmore Milling Co., Inc., 52 Main St., Oneonta, N. Y.
 Erie Alfalfa Mills, Inc., P. O. Box 848, Erie, Mich.
 John W. Eshelman & Sons, 244 North Queen St., Lancaster, Penn.
 Essex County Cooperative Farming Association, 144 South Main St., Topsfield, Mass.
 Evans Milling Co., Inc., 1730 West Michigan St., Indianapolis, Ind.
 Farm Bureau Association, 155 Lexington St., Waltham 54, Mass.
 Farm Bureau Cooperative Association, Inc., 245 North High St., Columbus 16, Ohio
 Farmers Feed Co., 375 Johnson Ave., Brooklyn 6, N. Y.
 Ferneau Grain Co., Gibson Bldg., Blanchester, Ohio
 Fishery Products, Inc., 1200 West Ninth St., Cleveland 13, Ohio
 Florida Citrus Canners Cooperative, P. O. Box 1111, Lake Wales, Florida
 Flory Milling Co., Inc., North Main St., Bangor, Penn.
 FMS, Inc., Thomasville, Penn.
 Fred A. Fountain, 355 Tremont St., Taunton, Mass.
 General Foods Corp., 250 North St., White Plains, N. Y.
 General Foods Corp., Corn Mill Div., 180 South Dearborn Ave., Kankakee, Ill.
 General Foods Corp., Gaines Div., 180 South Dearborn Ave., Kankakee, Ill.
 General Foods Corp., Post Cereals Div., 275 Cliff St., Battle Creek, Mich.
 General Mills, Inc., 400 Second Ave., South, Minneapolis, Minn.
 General Mills, Inc., Larowe Region, 15800 W. McNichols Rd., Detroit 35, Mich.
 Glidden Co., Soya Products Div., 1825 North Laramie Ave., Chicago 39, Ill.
 Gloucester By-Products, Inc., State Fish Pier, Gloucester, Mass.
 Roy Goff & Co., Inc., 240 Fairfield Ave., Bridgeport, Conn.
 Goldenrod Oil Meal Sales Co., 727 Beale Ave., Memphis 1, Tenn.
 Gorton's of Gloucester, Inc., 327 Main St., Gloucester, Mass.
 Grandin Brothers Corp., 1029 Allen St. Ext., Jamestown, N. Y.
 Great Atlantic & Pacific Tea Co., 817-512 Nicollet Bldg., Minneapolis 2, Minn.
 Haffenreffer & Co., Inc., 30 Germania St., Boston 30., Mass.
 Hales & Hunter Co., 141 West Jackson Blvd., Chicago 4, Ill.
 D. Harbeck & Sons, 405 Earle St., New Bedford, Mass.
 Harper Feed Mills, Inc., 271 West Wheeling St., Washington, Penn.
 Hartz Mountain Products Corp., 36 Cooper Square, New York 3, N. Y.
 Hayward, Inc., Oak Harbor, Ohio
 Hess & Clark, Inc., 7th & Orange Sts., Ashland, Ohio
 Hi-Life Packing Co., 431 S. Dearborn St., Chicago 5, Ill.
 Hoham Laboratories, Inc., Walnut St., Auburn, Ind.
 Honiggers' & Co., Inc., Fairbury, Ill.
 H. P. Hood & Sons, Inc., 500 Rutherford Ave., Boston 29, Mass.
 H. P. Hood & Sons, Dunedin, Florida
 E. C. & W. L. Hopkins, Inc., Greenfield, N. H.
 Hubinger Co., 601 Main St., Keokuk, Iowa
 Illinois Cereal Mills, Inc., South Jefferson Ave., Paris, Ill.
 J. F. Imbs Milling Co., 420 Merchants Exchange Bldg., St. Louis 2, Mo.
 Independent Tallow Co., 39 Cedar St., Woburn, Mass.

Industrial Molasses Corp., 3033 Excelsior Blvd., Minneapolis 16, Minn.
 International Milling Co., 1200 Investors Bldg., Minneapolis, Minn.
 International Minerals & Chemical Corp., 20 North Wacker Drive, Chicago 6, Ill
 International Stock Food Corp., 59 Main St., Delhi, N. Y.

Jaquith & Co., Inc., 305 Main St., Woburn, Mass.

Kasco Mills, Div. of St. Albans Grain Co., Inc., R.D. 2, Waverly, N. Y.
 Kellogg Sales Co., Feed Dept., 235 Porter St., Battle Creek, Mich.
 Spencer Kellogg & Sons, Inc., 98 Delaware Ave., Buffalo 2, N. Y.
 Kennel Food Supply Div., Hygrade Food Products Corp., 63 Mill Hill Ter., Fairfield, Conn.
 Kershaw Oil Mill, 427 N. Hampton St., Kershaw, N. C.
 Julius Kessler Distilling Co., Inc., Seventh Street Road, Louisville 1, Ky.
 (Formerly Joseph E. Seagram & Sons, Inc.)
 Keystone Chemurgic Corp., R.D. No. 1, Bethlehem, Penn.
 Keystone Dehydrators, Box 204, Nazareth, Penn.
 H. C. Knoke & Co., 5728 West Roosevelt Road, Chicago 50, Ill.
 Kraft Foods Co., 99 Park Ave., New York 16, N. Y.
 Chas. A. Krause Milling Co., 404 East State St., Milwaukee 1, Wis.
 Kronic's Coal & Grain Co., 43 Pleasant St., Adams, Mass.
 Kuder Pulp Sales Co., Lake Alfred, Florida

Lake States Yeast Corp., 603 W. Davenport St., Rhinelander, Wis.
 Lauhoff Grain Co., 321 E. North St., Danville, Ill.
 Lauhoff Soya Co., P. O. Box 571, Danville, Ill.
 Libby, McNeill & Libby, 4134 South Packers Ave., Chicago 9, Ill.
 Libner Grain Co., Inc., 25 Commerce St., Norwalk, Conn.
 Limestone Products Corp. of America, 122 Main St., Newton, N. J.
 Lincoln Mills, Inc., 1203 West 23d St., Indianapolis, Ind.
 L. B. Lovitt & Co., 314 Cotton Exchange Bldg., Memphis, Tenn.

McCabe Grain Co., Ltd., 409 Grain Exchange Bldg., Winnipeg, Man., Canada
 McMillen Feed Mills, Div. of Central Soya Co., Inc., 300 Fort Wayne Bank Bldg., Fort Wayne 2, Ind.

Mansfield Milling Co., Mansfield, Mass.
 Maple Leaf Milling Co., Ltd., Toronto, Ont., Canada
 Maritime Milling Co., Inc., 100 South Elmwood Ave., Buffalo 2, N. Y.
 Marvin Grain & Hardware Co., 31 Cove Road, South Dartmouth, Mass.
 Merchants Creamery Co., 536 Livingston St., Cincinnati 14, Ohio
 Merck & Co., Inc., Rahway, N. J.
 Merrimack Farmers' Exchange, Inc., Low Ave., Concord, N. H.
 Miller Alfalfa Co., Jackson & Gorman Sts., Defiance, Ohio
 Miner-Hillard Milling Co., 826 Second National Bank Bldg., Wilkes-Barre, Penn.
 Minnesota Linseed Oil Co., 25 44th Ave., N. E., Minneapolis 21, Minn.
 Minute Maid Corp., Florida Specialty Products Div., P. O. Box 720, Leesburg, Florida
 Geo. Q. Moon & Co., Inc., 201 Chenango St., Binghamton, N. Y.
 Jas. F. Morse & Co., 11 Horace St., Somerville 43, Mass.
 Morton Salt Co., 120 South LaSalle St., Chicago 3, Ill.
 Mowat, Wilson & Co., 18675 James Couzens Highway, Detroit 35, Mich.

Nappanee Milling Co. Inc., 301 South Jackson St., Nappanee, Ind.
 National Alfalfa Dehydrating & Milling Co., 101 South 4th St., Lamar, Col.
 National Biscuit Co., 449 West 14th St., New York 14, N. Y.
 National Biscuit Co., Toledo Mill, P. O. Box 1528 Central St., Toledo 3, Ohio
 National Distillers and Chemical Corp., 99 Park Ave., New York 16, N. Y.
 National Vitamin Products Co., 3401 Hiawatha Ave., South, Minneapolis 6, Minn.
 Neumond Co., 300 Merchants Exchange Bldg., St. Louis 2, Mo.
 Nitrogen Div., Allied Chemical & Dye Corp., P. O. Drawer 61, Hopweell, Va.
 Nopco Chemical Co., 1st & Essex Sts., Harrison, N. J.
 Northern Ohio Sugar Co., Special Products Div., 1530 Sixteenth St., Denver, Col.

Ogden Grain Co., Wurz Ave., Utica, N. Y.
 Old Mother Hubbard Dog Food Co., Inc., 40-44 Prospect St., Gloucester, Mass.
 Orleans Dog Candy Co., 431 South Dearborn St., Chicago 5, Ill.

Pagst Brewing Co., Merchandise Mart, Chicago 54, Ill.
Palm Grain Co., Lowell, Mass.
Park & Pollard Co., Inc., 100 South Elmwood Ave., Buffalo 2, N. Y.
George H. Parker Grain Co., 56 Water St., Danvers, Mass.
Pasco Packing Co., Dada City, Florida
Patent Cereals Co., 13-55 Bradford St., Geneva, N. Y.
Penick & Ford Ltd., Inc., Cedar Rapids, Iowa
Chas. Pfizer & Co., Inc., 11 Bartlett St., Brooklyn 6, N. Y.
Philadelphia Seed Co., Inc., P. O. Box 934, Philadelphia 5, Penn.
Pillsbury Mills, Inc., Minneapolis 2, Minn.

Quaker Oats Co., Merchandise Mart Plaza, Chicago 54, Ill.

Ralston Purina Co., 835 South Eighth St., St. Louis 2, Mo.
John Reardon & Sons Div. of Wilson & Co., Inc., 51 Waverly St., Cambridge, Mass.
Redbird Farm, Inc., Wrentham, Mass.
Red Star Yeast & Products Co., 221 East Buffalo St., Milwaukee 1, Wis.
D. F. Riley, P. O. Box A, Hatfield., Mass.
Riverside Elevator Co., 1366 Penobscot Bldg., Detroit, Mich.
Rudhard Products, Inc., 248 Michigan Ave., Buffalo 3, N. Y.
Russell-Miller Milling Co., 860 Grain Exchange, Minneapolis 15, Minn.
Rythet & Warren Co., Belchertown, Mass.

Schenley Distillers, Inc., 350 Fifth Ave., New York 1, N. Y.
Schoeneck Farms, Inc., R.D. No. 3, Nazareth, Penn.
Sea Board Supply Co., 35th & Grays Ferry Ave., Philadelphia 46, Penn.
Sherwin-Williams Co., 101 Prospect Ave., N.W., Cleveland, Ohio
Shirriff-Horsey Corporation, Ltd., Plant City, Florida
Silmo Chemical Corp., Box 352, Vineland, N. J.
David Small, East Hartford, Conn.
W. J. Small Co., Div. of Archer-Daniels-Midland Co., P.O. Box 356, Kansas City 41, Mo.
Allen V. Smith, Inc., Marcellus Falls, N. Y.
J. H. Smith Grain, Inc., Haverhill, Mass.
Smith Meal Co., Inc., P. O. Drawer 248, Amagansett, N. Y.
Southern Fruit Distributors, Inc., P. O. Box 671, Orlando, Florida
Spratt's Patent (America) Ltd., 18 Congress St., Newark 5, N. J.
Stabilized Vitamins, Inc., 57-59 Commerce St., Brooklyn 31, N. Y.
A. E. Staley Manufacturing Co., Eldorado & 22nd Sts., Dacatur, Ill.
Standard Brands, Inc., Special Products Div., 625 Madison Ave., New York 22, N. Y.
Standard Brands, Inc., Pet Food Div., 625 Madison Ave., New York 22, N. Y.
Sturdy Dog Food Co., 2103 West Genesee St., Syracuse, N. Y.
Suni-Citrus Products Co., Cocke & Co., Agents, 208 William-Oliver Bldg., Atlanta, Ga.
Sunshine Biscuits, Inc., 29-10 Thompson Ave., Long Island City, N. Y.
Sunshine Biscuits, Inc., Milling Division, Mechanic St., Grafton, Ohio
Swift & Co., P. O. Box 110, Fostoria, Ohio
Swift & Co., Pard Dept., Union Stock Yards, Chicago 9, Ill.

Taft Bros., Uxbridge, Mass.

Union Starch & Refining Co., 301 Washington St., Columbus, Ind.
United Co-Operative Farmers, Inc., 339 Broad St., Fitchburg, Mass.
Unity Feeds, Inc., 177 Milk St., Boston, Mass.
George Urban Milling Co., 332 North Oak St., Buffalo 3, N. Y.
U. S. Industrial Chemicals Co., Div. of National Distillers Products Corp., 99 Park Ave., New York 16, N. Y.

Ventura Grain Co., 7 Purchase St., Taunton, Mass.
Vitality Mills, Inc., 250 West 87th St., Chicago 20, Ill.

Hiram Walker & Sons, Inc., Foot of Edmund St., Peoria, Ill.
C. P. Washburn Co., Cambridge St., Middleboro, Mass.
H. K. Webster Co., 24 West St., Lawrence, Mass.
Western Condensing Co., Box 739, Appleton, Wis.
Whitmoyer Laboratories, Inc., 19 North Railroad St., Myerstown, Penn.
Wilson & Co., Inc., 4200 S. Marshfield Ave., Chicago 9, Ill.
Wilson's Corn Products, Inc., East Fourth St., Rochester, Ind.
Winter Garden Citrus Products Cooperative, P. O. Box 399, Winter Garden, Florida
Wirthmore Grain Co., 15 Harrison Ave., Taunton, Mass.

Yieldmor Feeds, Inc., 101 South Downing St., Piqua, Ohio

Thirty-seventh Annual Report of Pullorum Disease Eradication in Massachusetts



A total of 339 chicken, turkey, and pheasant flocks was tested during the 1956-57 testing season. Among 1,178,338 samples tested, 0.01 percent was positive, which is a definite decrease over the percentage (0.08) positive in the previous season. Four flocks revealed infection, and at the close of the season all but one were classified as negative. Pullorum infection was detected in one flock that was negative the previous season. It is encouraging to note that 99.87 percent of all birds tested are in nonreacting flocks.

THIRTY-SEVENTH ANNUAL REPORT OF PULLORUM DISEASE ERADICATION IN MASSACHUSETTS 1956-57

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C. F. Smyser, and G. H. Snoeyenbos
Department of Veterinary Science

INTRODUCTION

In the 1956-57 testing season 339 flocks were tested, which is significantly less than the number (353) tested in 1955-56. The number of samples tested (1,178,338) was essentially the same as in the previous season, but the percentage (0.01) of positive tests was less than that (0.08) of the previous season. Pullorum reactors were detected in four flocks, one of which was negative the previous year. It is encouraging to note that fewer infected flocks were detected and that of the total birds tested 95.18 percent were found in 100-percent tested nonreacting flocks.

The laboratory appreciates the fine cooperation it has received from the Massachusetts poultry industry in striving to eradicate pullorum disease from its flocks. It is hoped that this concerted effort may become more effective in the years ahead to eliminate completely this disease from Massachusetts flocks.

We also wish to express our appreciation for the splendid cooperation received from the Extension Service, Massachusetts Department of Agriculture, and other agencies.

SUMMARY OF SERVICE RENDERED

Flocks tested.....	339
Chicken.....	272
Turkey.....	41
Pheasant.....	26
Number of tests.....	1,178,338
Chickens:	
Routine.....	1,077,323
Experimental.....	67,509
Fowl other than chickens:	
Routine.....	33,503
Experimental.....	3
Owners receiving necropsy service.....	39
Necropsies of reacting birds.....	89
Fowl Typhoid Tests:	
Number of flocks.....	2
Number of tests.....	732
Number of positive tests.....	0

Table 1. Distribution of Tests and Reactors by Counties and by Breeds

Breeds	Barnstable	Berkshire	Bristol	Essex	Franklin	Hampden	Hampshire	Middlesex	Norfolk	Plymouth	Worcester	Totals	Percent Positive
Rhode Island Reds													
Total tests.....	335	262	50,761	16,866	8,201	9,645	4,387	21,748	30,063	23,058	50,597	215,923	0.04
Positive tests.....	0	0	28	0	0	0	0	0	0	0	54	82	
New Hampshires													
Total tests.....	20,170		57,884	21,752				7,731	14,633	14,784	4,208	141,162	0.0005
Positive tests.....	0		7	0				0	0	0	0	7	
Barred Plymouth Rocks													
Total tests.....		4,278	37,115	12,143	7,312	565	3,180	42,878	22,410	30,346	41,225	201,452	0.00
Positive tests.....		0	0	0	0	0	0	0	0	0	0	0	
White Plymouth Rocks													
Total tests.....		13,561	11,113	80,699	26,689	20,087	37,122	61,390	31,359	86,374	34,503	402,897	0.00005
Positive tests.....		0	0	0	0	0	0	0	0	0	2	2	
White Leghorns													
Total tests.....		23,906	3,335	615	1,843	549	7,381		12,932	1,386	1,729	53,676	0.00
Positive tests.....		0	0	0	0	0	0		0	0	0	0	
Miscellaneous													
Total tests.....	2,391	1,070	12,546	38,633	972	3,170	2,505	22,109	12,214	19,206	14,906	129,722	0.04
Positive tests.....	0	0	4	0	0	0	0	45	0	0	2	51	
Total Tests.....	22,896	43,077	172,754	170,708	45,017	34,016	54,575	155,856	123,611	175,154	147,168	1,144,832	
Positive tests													
Number.....	0	0	39	0	0	0	0	45	0	0	58	142	
Percent.....	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.04		0.01

DISTRIBUTION OF TESTS AND REACTORS

A total of 1,141,832 chicken samples from 11 counties was tested, and the percentage of positive tests was 0.01. No reactors were detected in eight counties. Also, the Barred Plymouth Rocks and White Leghorns tested revealed no reactors. Plymouth, Bristol, Essex, and Middlesex Counties led in the number of samples tested.

The following breeds were tested: Australorp, Bantam, Barred Plymouth Rock, Columbian, Cornish, Crosses, Delaware, New Hampshire, Rhode Island Red, White American, White Leghorn, White Plymouth Rock, White Wyandotte.

The White Plymouth Rock, Rhode Island Red, Barred Plymouth Rock, New Hampshire, and White Leghorn were the predominating breeds tested. Of the total samples tested, 35.19 percent were taken from White Plymouth Rock, 18.86 percent from Rhode Island Red, 17.60 percent from Barred Plymouth Rock, 12.33 percent from the New Hampshire, and the remainder from other breeds.

Of the 1,043,942 samples collected from females, 26.867 were from hens and 1,017,075 from pullets, with 0.004 and 0.013 percent reactors, respectively. Among the 100,890 samples collected from males, 0.004 percent were positive.

ANNUAL TESTING OF FLOCKS

Table 2 lists the result from flocks tested (1) for the first time, (2) intermittently, (3) for two consecutive years, and (4) for three or more consecutive years.

In the group tested for the first time, 61 reactors were detected in one flock that was subjected to an intensive retesting program, which was successful in eliminating the infection from the flock. More flocks and birds were tested in this group than during the previous season. The average percentage of reactors (0.08) was also considerably less. The average number of birds to a flock in this group was 2,405.

In the intermittent group no reactors were detected. The average number of birds to a flock was 2,865. In this group fewer flocks and birds were tested than in the other groups.

In the two-year group the 23 reactors were identified in one flock. The infection in this flock was eliminated through retesting. The average number of birds to a flock was 2,736.

Table 2. Annual Testing Versus Single and Intermittent Testing

Classification	Flocks	Birds	Total Tests	Positive Tests		Negative Flocks		Positive Flocks	
				Number	Percent	100-Percent Tested	Partially Tested	100-Percent Tested	Partially Tested
Tested for the first time.....	22	52,912	73,083	61	0.08	18	3	1	—
Intermittent testing.....	17	48,699	48,699	0	0.00	16	1	—	—
Two consecutive years.....	21	57,453	63,293	23	0.04	20	1	—	—
Three or more consecutive years.	212	933,992	959,757	58	0.006	200	12	—	—
TOTALS.....	272	1,093,056	1,144,832	142	0.01	254	17	1	—

In the group tested for three or more consecutive years, there were 212 flocks, representing 959,757 tests, of which 0.006 percent were positive. All flocks were classified as negative at the end of the testing year. Two flocks were infected, but the infection was eliminated through retesting before the termination of the season. The average number of birds to a flock in this group was 4,406.

For all four groups 272 flocks were tested, representing 1,093,056 birds and 1,144,832 samples, of which 0.01 percent were positive. The 254 flocks that were 100-percent tested and nonreacting contained 1,040,327 birds or 95.18 percent of the total birds tested. One flock was classified as positive. The percentage of reactors among these birds was 3.24.

During the past year 52 or 18.25 percent of the flocks tested in 1955-56 were not tested. Annual testing of flocks is necessary to determine the pullorum status of flocks. If flock owners find it necessary to omit testing for a year or more, they should procure replacement stock from officially recognized pullorum-passed and pullorum-clean flocks. Adequate precautions should be taken against the introduction of infection.

APPEARANCE OF INFECTION IN FLOCKS PREVIOUSLY NEGATIVE

Pullorum infection was detected in one flock that had been negative for six consecutive years. The percentage of reactors detected was 2.49. The source of the infection was not established, although the reactors were confined to certain age groups and breed in the flock. Four tests were required to eliminate the infection from the flock.

Table 3 lists the incidence of "breaks" among Massachusetts tested flocks during the past 16 years.

Flock owners and hatcherymen should constantly observe the strictest vigilance against the introduction and spread of the disease.

The following measures have been effective in establishing and maintaining a pullorum-free flock.

1. All the birds on the premises should be tested each year.
2. If infection is present, the entire flock should be retested within four to six weeks until a negative report is obtained, provided the value of the birds justifies the expenditure.
3. Every reactor, regardless of its value, should be removed from the premises and sold for slaughter immediately upon receipt of the report.
4. Offal from all birds dressed for market or for home consumption as well as dead birds that are not fit for consumption should be burned.
5. The poultry houses, runs, and equipment should be thoroughly cleaned and disinfected immediately after removal of reactors. An empty pen to each house should be provided to facilitate cleaning and disinfection during the winter months. Disinfectants approved by the United States Department of Agriculture should be used.
6. Birds removed from the premises to egg-laying contests, exhibitions, etc. should be held in quarantine and determined free of disease before they are readmitted into the flock.

**Table 3. Incidence of "Breaks" Observed During the
Past Fifteen Years**

Year	Number of Flocks	Breaks		Flocks with Less than 0.5 Percent Infection on First Test	
		Number	Percent	Number	Percent
1942	255	6	2.35	3	50.00
1943	286	13	4.54	8	61.54
1944	289	17	5.88	13	76.47
1945	340	21	6.18	17	80.95
1946	388	20	5.15	14	70.00
1947	430	17	3.95	9	52.94
1948	425	16	3.76	13	81.25
1949	386	6	1.55	3	50.00
1950	383	18	4.70	16	88.88
1951	381	6	1.57	6	100.00
1952	360	8	2.22	5	62.50
1953	316	7	2.22	4	57.14
1954	291	2	0.69	2	100.00
1955	275	5	1.82	2	40.00
1956	254	0	0.00	0	0.00
1957	233	1	0.43	0	0.00

7. Purchase of stock in the form of adults, chicks, and eggs should be from known pullorum disease-free flocks. The Massachusetts Department of Agriculture, 41 Tremont Street, Boston, should be consulted regarding additions or replacements in the flock.

8. Eggs should not be saved for hatching until after a flock has been tested and all the infected birds removed. Early pullet testing will permit early hatching.

9. Fresh and infertile eggs from unknown or infected sources should not be fed to chickens or exposed to birds or animals, such as crows, sparrows, and skunks, which may carry or spread the infection.

10. Poultrymen should not custom-hatch for untested or infected flocks (including fowl other than chickens).

11. Owners of pullorum disease-free flocks should not permit hatching where infected eggs or stock may be found.

12. Poultrymen should not buy feed in bags that have been used or exposed to infection. (Such bags if properly disinfected will be safe for further use.)

13. Poultrymen should regard fowl other than chickens as a possible source of pullorum infection unless tested and found free from pullorum disease.

14. Poultrymen should not use equipment that has been exposed to or contaminated with infective material unless it is properly cleaned and sterilized or disinfected.

TESTING OF FOWL OTHER THAN CHICKENS

During the past year 33,506 samples from fowl other than chickens, including 22,775 turkeys, 9,099 pheasants, 1,265 quail, 315 partridge, 28 geese, 21 ducks, and 3 pea fowl were tested. No reactors were detected.

NONREACTING AND POSITIVE FLOCKS CLASSIFIED BY COUNTIES

A total of 271 nonreacting flocks, representing 1,091,667 birds, was identified in 11 counties, as listed in table 4. A total of 254 flocks was 100-percent tested, whereas 17 flocks were partially tested. The latter group constituted 51,340 birds in nine counties. Partial flock testing is not recommended to determine the true status of a flock. It is encouraging to note that 95.18 percent of all birds tested are in 100-percent nonreacting flocks, and it is hoped that in the near future all flocks will be 100-percent tested.

Only one flock representing 1,389 birds was classified as positive at the close of the season. However, tests conducted since that time in this flock have revealed no reactors.

During the coming year every effort will be made to eliminate every known focus of infection regardless of the flock in which disease may be detected. It is hoped that flock owners will cooperate to the fullest extent in order that the disease may be eradicated from the Massachusetts poultry industry.

Table 4. Nonreacting and Positive Flocks Classified by Counties

County	100% Tested		Partially Tested		Totals	
	Flocks	Birds	Flocks	Birds	Flocks	Birds
Nonreacting Flocks						
Barnstable	2	22,539	2	357	4	22,896
Berkshire	6	28,954	1	14,123	7	43,077
Bristol	36	134,996	3	5,983	39	140,979
Essex	34	162,434	4	8,159	38	170,593
Franklin	17	45,017	—	—	17	45,017
Hampden	11	34,016	—	—	11	34,016
Hampshire	20	49,012	1	1,357	21	50,369
Middlesex	38	148,042	2	1,629	40	149,671
Norfolk	26	110,946	1	12,665	27	123,611
Plymouth	37	168,071	2	6,381	39	174,452
Worcester	27	136,300	1	686	28	136,986
Totals	254	1,040,327	17	51,340	271	1,091,667
Positive Flocks						
Middlesex	1	1,389	—	—	1	1,389
Totals	1	1,389	—	—	1	1,389

COMPARISON OF 1955-56 AND 1956-57 TESTING

Table 5 lists testing data for the two seasons. Fewer flocks but more birds and samples were tested this season than in 1955-56. The percentage of reactors was appreciably less than in 1955-56. Definite progress is being made in eradicating this disease, and it is hoped that flock owners will continue or increase their interest and support in a sound eradication program.

Table 5. Comparison of 1955-56 and 1956-57 Testing

County	Flocks	Birds	Tests	Positive Tests Percent	Nonreacting Flocks
1955-56 Season					
Barnstable	5	36,998	36,998	0.00	5
Berkshire	8	30,973	30,973	0.00	8
Bristol	38	118,668	169,928	0.27	37
Essex	44	197,406	200,229	0.03	44
Franklin	11	26,239	26,239	0.00	11
Hampden	14	23,467	23,467	0.00	14
Hampshire	18	47,856	47,856	0.00	18
Middlesex	47	179,510	192,343	0.21	46
Norfolk	23	106,285	106,285	0.00	23
Plymouth	40	170,940	170,940	0.00	40
Worcester	37	139,107	139,107	0.00	37
Totals	285	1,077,449	1,144,365	0.08	283
1956-57 Season					
Barnstable	4	22,896	22,896	0.00	4
Berkshire	7	43,077	43,077	0.00	7
Bristol	39	140,979	172,754	0.02	39
Essex	38	170,593	170,708	0.00	38
Franklin	17	45,017	45,017	0.00	17
Hampden	11	34,016	34,016	0.00	11
Hampshire	21	50,369	54,575	0.00	21
Middlesex	41	151,060	155,856	0.03	40
Norfolk	27	123,611	123,611	0.00	27
Plymouth	39	174,452	175,154	0.00	39
Worcester	28	136,986	147,168	0.04	28
Totals	272	1,093,056	1,144,832	0.01	271

THIRTY-SEVEN-YEAR PULLORUM DISEASE TESTING SUMMARY

Table 6 is a summary of the testing results for thirty-seven years of testing. The data reveal that pullorum disease can be eliminated from flocks and that complete eradication should be possible to attain in the near future.

Table 6. Thirty-Seven-Year Pullorum Disease Testing Summary

Season	Flocks	Birds	Total Tests	Positive Tests Percent	Non-reacting Flocks	Birds in Non-reacting Flocks	
						Number	Percent
1920-21.....	108	24,718	24,718	12.50	25	2,414	9.77
1921-22.....	110	29,875	29,875	12.65	27	4,032	13.50
1922-23.....	121	33,602	33,602	7.60	29	5,400	16.07
1923-24.....	139	59,635	59,635	6.53	38	11,082	18.58
1924-25.....	156	66,503	66,503	2.94	79	25,390	38.18
1925-26.....	201	67,919	67,919	2.31	124	33,615	49.49
1926-27.....	249	127,327	127,327	4.03	114	40,269	31.63
1927-28.....	321	190,658	232,091	5.35	138	80,829	42.39
1928-29.....	413	254,512	304,092	3.56	228	153,334	60.25
1929-30.....	460	331,314	386,098	2.17	309	203,038	66.97
1930-31.....	447	356,810	402,983	1.47	328	267,229	74.89
1931-32.....	455	377,191	420,861	0.90	355	298,534	79.15
1932-33.....	335	296,093	300,714	0.47	276	238,074	80.41
1933-34.....	262	263,241	284,848	0.53	229	212,782	80.83
1934-35.....	244	281,124	301,887	0.39	213	251,778	89.56
1935-36.....	252	329,659	344,081	0.30	230	315,215	95.95
1936-37.....	307	448,519	561,762	0.37	281	424,431	94.63
1937-38.....	308	480,227	497,769	0.17	286	457,466	95.26
1938-39.....	355	571,065	615,205	0.34	327	469,134	82.15
1939-40.....	346	573,000	673,222	0.51	332	497,356	86.80
1940-41.....	309	527,328	538,589	0.09	299	492,475	93.39
1941-42.....	366	653,080	662,715	0.27	350	591,628	90.59
1942-43.....	332	637,666	649,137	0.48	317	600,607	94.19
1943-44.....	413	762,066	791,596	0.11	386	721,229	94.64
1944-45.....	458	836,481	943,987	0.12	431	792,551	94.75
1945-46.....	538	1,125,737	1,225,594	0.12	513	1,085,726	96.45
1946-47.....	562	1,156,147	1,238,983	0.13	534	1,112,043	96.19
1947-48.....	494	1,219,957	1,272,547	0.10	476	1,185,852	97.20
1948-49.....	458	1,179,481	1,213,073	0.04	452	1,171,363	99.31
1949-50.....	475	1,360,865	1,444,364	0.06	465	1,344,860	98.82
1950-51.....	448	1,358,540	1,394,192	0.05	442	1,339,068	98.57
1951-52.....	417	1,343,955	1,370,430	0.016	412	1,324,195	98.53
1952-53.....	371	1,155,359	1,168,739	0.04	366	1,146,932	99.27
1953-54.....	338	1,178,090	1,195,159	0.004	335	1,170,936	99.39
1954-55.....	311	1,101,543	1,169,822	0.13	306	1,085,449	98.54
1955-56.....	285	1,077,449	1,144,365	0.08	283	1,071,031	99.40
1956-57.....	272	1,093,056	1,144,832	0.01	271	1,091,667	99.87

COMMENTS AND SUGGESTIONS

Filing Applications for Testing: At the beginning of each season, flock owners who received testing service the previous season are sent application cards for the next year's work. Applications are processed in the order that they are received from the owners. Flock owners who delay or fail to return their cards cannot

expect immediate testing service. It should be recognized that the testing load has to be distributed over several months instead of two or three months, because it is practically impossible to employ personnel for only a few months. Also, all breeding flocks should be tested as soon as the birds are five months of age, if the laboratory is in a position to do so.

Expansion in Efforts Toward Pullorum Disease Eradication: The testing results that have been accumulated over the years definitely reveal that pullorum disease can be eradicated from our breeding flocks. However, to prevent possible reinfection of the pullorum-clean flocks, all known foci of infection, regardless of the flock, should be eliminated through appropriate and effective measures. The general plan of the program will be built around the following recommendations, which have been approved by the Massachusetts Federation of Poultry Associations.

I. Handling of flocks with acute outbreaks:

A. Affected chicks should be destroyed or reared for broilers. If early liquidation is not possible, then infection should be eliminated through short interval retesting.

B. In adult flocks special precautionary measures should be instituted to prevent the disease from spreading within the flock or to other flocks.

1. Flocks in the acute stage of the disease should not be sold.
2. Affected pens should be isolated if possible.
3. Medication should be given under the supervision of competent persons.
4. After the disease has subsided the flock should either be sold or tested at short intervals.

C. The use of drugs in an acute outbreak should be exercised only upon recommendation by competent persons.

II. Handling of infected tested breeding flocks:

A. Flock owners desiring official recognition are compelled to eradicate the disease from their flocks.

B. Infected breeding flocks whose owners do not wish to receive official recognition should be subjected to a planned eradication program.

III. Specific sanitary and control measures:

A. Upon identification of infection, effective plans should be applied regarding movement and sale of stock.

1. Infected semimature and mature flocks when sold should be slaughtered.
2. Reactors should be removed and sold for slaughter as soon as possible.
3. Immediately upon detection of infection in breeder and commercial hatcheries, effective plans should be instituted to prevent the further spread of the disease.

B. Sanitary conditions consistent with a sound eradication program should be maintained on all contaminated premises.

C. Only flocks that meet the qualifications of the pullorum-passed and pullorum-clean grades should be permitted to produce hatching eggs.

D. The purchase of pullorum-clean stock should be more widely advocated.

E. All birds entered in shows and contests should be free of pullorum disease as determined by the agglutination test.

F. Regulatory aid should be requested for flock owners refusing to cooperate on a voluntary basis.

G. The testing of infected flocks should be done on a free basis by an official state agent.

H. An extensive educational program should be a vital part of the eradication campaign.

Only Pullorum-Passed and Pullorum-Clean Stock May Be Sold: During the past year a pullorum disease law was enacted in Massachusetts that will be greatly beneficial in preventing the introduction and spread of pullorum infection in the State. The law reads as follows:

"Chapter 129 of the General Laws is hereby amended by inserting after section 26A the following section:—*Section 26B.* No person shall buy, sell or transport within or import into the commonwealth hatching eggs, baby chicks or live poultry, except poultry intended for immediate slaughter or for exhibition subject to permit granted by the state department of agriculture, unless such hatching eggs are the produce of flocks which meet, and such baby chicks or live poultry meet or are the first generation progeny of flocks which meet, the minimum requirements for "pullorum passed" or "pullorum clean" grades of poultry, as established by the commissioner of agriculture, or the equivalent thereof. Whoever, himself or by his servant or agent, violates any provision of this section shall be punished for the first offence by a fine of not more than one hundred dollars, and for a subsequent offence by a fine of not less than fifty nor more than two hundred dollars."

This law was designed to aid every poultryman, large and small, to raise poultry free of pullorum infection, which has been a costly disease through the years. The ultimate goal is to attain complete eradication of the disease so that our poultrymen will not have to spend large sums of money each year to test their flocks.

Testing of Exhibition Stock: Last winter all chickens and turkeys were tested at the Boston Poultry Show. Infection was found in entries from six exhibitors, two of which were from Massachusetts. Although the incidence of infection was very low, it should be recognized that many entries consisted only of a few birds and that the sample tested did not give the true status of the entire flock. In one case the entire flock was tested later and revealed 33 percent reactors. Unquestionably, breeders of exhibition stock would benefit from having their flocks tested annually since they subject their birds to possible sources of infection that may exist at shows.

Inspection of Commercial Fertilizers and Agricultural Lime Products

BY

Fertilizer Control Service Staff

Massachusetts Agricultural Experiment Station

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This is the eighty-fourth report of the Massachusetts Fertilizer Control made in accordance with Chapter 94, Sections 250 to 261, inclusive, of Massachusetts General Laws 1920, as amended by Chapter 67, Acts of 1933.

INSPECTION OF COMMERCIAL FERTILIZERS AND AGRICULTURAL LIME PRODUCTS FOR THE SEASON OF 1957

BY FERTILIZER CONTROL SERVICE STAFF

John W. Kuzmeski, *Research Professor, Official Chemist*
Albert F. Spelman, *Associate Research Professor*
C. Tyson Smith, *Associate Research Professor, Microscopist*
Bertram Gersten, *Assistant Research Professor*
David F. Owen, Jr., *Research Instructor*
Shirley J. Richards, *Research Instructor*
Joseph Conklin, *Inspector*
Edward F. Vlach, *Technical Assistant*
Paul Korpita, *Laboratory Assistant*
Cora B. Grover, *Principal Clerk*

PERTINENT FACTS RELATING TO MASSACHUSETTS FERTILIZER LAW

Commercial Fertilizers

Registration is required annually on January 1.

Registration fee is \$8 for each element: nitrogen, phosphoric acid, potash, and magnesia.

Label must show:

Net weight of fertilizer

Name, brand or trade mark, and grade

Name and address of manufacturer

Guaranteed analysis: nitrogen, available phosphoric acid, water soluble potash. A guarantee of total phosphoric acid may be used instead of available phosphoric acid for bone, untreated phosphate rock, tankage, dried and pulverized manures, ground seeds, and wood ashes.

Tonnage reports are required semiannually, on January 1 and July 1.

Tonnage fee: 6 cents per ton of 2,000 pounds

Lime Products

Registration is required annually on January 1.

Registration fee: \$12 for each brand.

Label must show:

Net weight of product

Name, brand or trade mark, and form of lime

Name and address of manufacturer

Guaranteed analysis: calcium oxide, magnesium oxide, carbonates of calcium and magnesium, or calcium sulfate (in gypsum or land plaster)

Make checks payable to Massachusetts Agricultural Experiment Station and send correspondence to

JOHN W. KUZMESKI
Massachusetts Agricultural Experiment Station
Amherst, Mass.

FERTILIZER TONNAGE

Tonnage of Fertilizer Sold in Massachusetts

	1955		1956	
	Jan. 1 to July 1	July 1 to Dec. 31	Jan. 1 to July 1	July 1 to Dec. 31
Mixed fertilizers.....	59,061	9,615	49,194	13,822
Fertilizer chemicals and materials unmixed.....	10,138	3,915	9,943	5,346
Pulverized animal manures.....	1,870	425	1,486	565
Totals.....	71,069	13,955	60,623	19,733

Tonnage of Mixed Fertilizers, January 1 to December 31, 1956

Grade*	Tonnage		Brands	Grade*	Tonnage		Brands
	Jan. 1 to July 1	July 1 to Dec. 31			Jan. 1 to July 1	July 1 to Dec. 31	
5-10-10	12,121	2,829	32	0-15-30	640	488	8
10-10-10	6,191	2,385	16	6-12-12	627	32	—
5-8-7	4,218	583	17	4-12-16	317	193	6
6-3-6	4,126	150	12	0-20-20	306	205	11
8-16-16	3,308	1,606	12	10- 6- 4	223	142	10
6-10-4	2,769	268	9	5- 5-15	161	2	5
7-7-7	2,708	1,222	18	4-12- 8	127	5	—
5-10-5	1,875	453	32	3-12-12	115	47	5
8-6-4	1,316	401	7	0-10-20	104	97	—
6-8-8	1,165	137	12	12-12-12	34	23	—
8-6-2	1,005	475	10	10- 5- 5	31	9	—
9-7-4	964	596	—	0-14-14	23	5	—
8-12-12	809	64	7	15-30-15	13	4	6
8-8-8	759	7	6	Miscellaneous	3,139	1,494	—
				Totals.....	49,194	13,822	355

*The grade represents the plant food guarantee and is expressed in the order of nitrogen, available phosphoric acid, and potash.

Tonnage of Unmixed Materials, January 1 to December 31, 1956

Material	Tonnage		Brands
	Jan 1 to July 1	July 1 to Dec. 31	
Process tankage and activated sewage.....	3,706	1,370	21
Superphosphate.....	2,075	1,643	13
Pulverized animal manures.....	1,486	565	27
Cottonseed meal.....	1,014	761	—
Ammonium nitrate.....	747	378	—
Nitrate of soda.....	575	200	—
Bone meal.....	444	248	17
Muriate of potash.....	348	187	11
Castor pomace.....	288	116	—
Cyanamid.....	235	40	—
Urea.....	107	41	5
Sulfate of ammonia.....	88	50	9
Rock phosphate.....	65	47	—
Linseed meal.....	—	75	—
Miscellaneous.....	251	190	—
Totals.....	11,429	5,911	141

MIXED FERTILIZERS

Deficiency Statistics for Mixed Fertilizers

Manufacturer	Number of Samples		Number of Tests				
	Analyzed	With No Deficiencies	Totals	Less than 1% Per Cent Below Guarantee	Between 1% and 2% Per Cent Below Guarantee	Between 2% and 3% Per Cent Below Guarantee	More than 3% Per Cent Below Guarantee
Agricultural Products.....	3	2	9	1	0	0	0
American Agricultural Chemical Co....	60	41	180	6	10	2	4
Armour Fertilizer Works.....	33	15	101	7	8	3	2
Atlas Fish Fertilizer Co.....	1	1	3	0	0	0	0
F. A. Bartlett Tree Expert Co.....	1	1	3	0	0	0	0
Baugh & Sons Co.....	5	5	15	0	0	0	0
Joseph Breck & Sons Corp.....	4	2	13	1	0	1	0
California Spray-Chemical Corp.....	2	1	6	0	0	0	1
Carac Corp.....	3	3	9	0	0	0	0
Carbola Chemical Co. Inc.....	1	1	3	0	0	0	0
Chesnicka Landscape Service.....	2	2	6	0	0	0	0
Clinton Nurseries.....	2	2	6	0	0	0	0
Consolidated Rendering Co.....	52	37	154	7	2	3	3
Davison Chemical Co.....	6	3	17	0	1	2	1
Doggett-Pfeil Co.....	3	1	8	0	0	0	2
Doughten Seed Co.....	1	1	3	0	0	0	0
E. I. du Pont de Nemours & Co.....	1	1	3	0	0	0	0
Eastern States Farmers' Exchange, Inc.	33	24	123	1	3	0	5
Essex County Cooperative Farming Association.....	7	5	24	1	1	0	0
Faesy & Besthoff, Inc.....	4	3	12	0	0	1	0
Farm Bureau Ass'n.....	11	7	41	1	3	0	0
Flestar, Inc.....	1	1	2	0	0	0	0
Forward House Div., Olin Mathieson Chemical Corp.....	1	1	3	0	0	0	0
Frank's Market Garden.....	1	1	3	0	0	0	0
Frost & Higgins Co.....	1	1	3	0	0	0	0
Garfield Williamson, Inc.....	2	1	6	0	0	1	0
Glorion Div., Aluminum and Chemical Corp.....	2	2	6	0	0	0	0
Goulard & Olena, Inc.....	6	2	18	1	0	0	3
Heller Greenhouse Laboratories.....	1	1	3	0	0	0	0
A. H. Hoffman, Inc.....	2	2	6	0	0	0	0
Hubbard-Hall Chemical Co.....	63	53	193	2	3	3	2
Hydroponic Chemical Co., Inc.....	1	1	3	0	0	0	0
Hy-Trous Corp.....	1	1	3	0	0	0	0
International Minerals & Chemical Corp.....	31	24	117	4	2	1	0
Kapco Div., Summers Fertilizer Co....	1	0	3	0	0	0	1
Lebanon Chemical Corp.....	2	2	6	0	0	0	0
Lee Patten Seed Co.....	1	1	3	0	0	0	0
O. E. Linck Co., Inc.....	1	1	3	0	0	0	0
John D. Lyon, Inc.....	2	2	6	0	0	0	0
Monsanto Chemical Co.....	1	1	3	0	0	0	0
Old Fox Agricultural Sales, Inc.....	21	18	68	1	2	0	0
Olds & Whipple, Inc.....	8	8	25	0	0	0	0
Parks-Barnes, Inc.....	3	3	9	0	0	0	0
Penn Co.....	1	1	3	0	0	0	0
Plant Products Corp.....	1	1	3	0	0	0	0
Plantables Corp.....	1	1	3	0	0	0	0
Ra-Pid-Gro Corp.....	2	1	6	0	0	0	1
Rose Manufacturing Co.....	1	1	3	0	1	0	0
O. M. Scott & Sons Co.....	4	3	12	0	1	0	0
Sears, Roebuck & Co.....	10	8	30	0	0	1	1
Stim-U-Plant Laboratories, Inc.....	2	1	6	0	1	0	0
Swift & Co., Plant Food Div.....	2	5	21	0	1	0	1
Tait & Co.....	1	1	3	0	0	0	0
Universal Chemical Co.....	4	3	12	0	0	1	0
Valley Feed & Supply Co., Inc.....	1	1	3	0	0	0	0
F. H. Woodruff & Sons, Inc.....	1	1	3	0	0	0	0
Totals.....	424	313	1 339	33	39	19	27

EXPLANATION OF TABLE OF ANALYSES

Guarantee. The plant food guarantee or the grade of each fertilizer is made a part of the trade name under the heading "Name of Manufacturer and Brand" and is expressed as nitrogen, available phosphoric acid, and water soluble potash in that order.

Mixtures Substantially Complying with the Guarantee. In addition to those fertilizers that meet their guarantees in every respect, this table includes also a list of those mixtures that have one or more elements below the guaranteed percentage but have a shortage of less than \$1 per ton.

This table, in addition to the data mentioned in the next paragraph, contains only results of analytical tests pertaining to the average amount of water insoluble nitrogen present in some brands, since this information is of value to tobacco growers and other users of fertilizers containing a high percentage of this form of nitrogen.

Potash Forms. Tests for chlorine are made only on tobacco mixtures and on those fertilizers that carry a guarantee of potash in forms other than muriate. When the amount of chlorine present in any brand exceeds the tolerance allowed for that brand, this fact is indicated by a footnote.

Mixtures Showing a Commercial Shortage of \$1 or More per Ton

Manufacturer and Brand	Nitrogen Found		Available Phosphoric Acid Found	Water Soluble Potash (K ₂ O) Found	Approximate Commercial Shortage per Ton
	Water Insoluble Organic	Total			
American Agricultural Chemical Co.					
Agrico for Top Dressing 10-10-10 (a)	—	9.08	10.17	10.73	\$1.69
Armour Fertilizer Works					
Armour's Big Crop 8-16-16(a)	—	7.35	16.00	14.30	3.65
Armour's Vertagreen Plant Food for Commercial Crops 6-12-12 (a)	—	5.86	11.44	11.80	1.84
Consolidated Rendering Co.					
Corenco 0-20-20 (a)	—	—	19.16	20.00	1.68
Corenco 0-20-20	—	—	18.88	20.20	2.04
Corenco 10-10-10 (a)	—	8.66	10.07	10.32	3.56
Ra-Pid-Gro Corp.					
Ra-Pid-Gro 23-21-17	—	23.50	19.00	17.70	*
Swift & Co., Plant Food Div					
Instant Vigoro 19-28-14	—	23.00	19.80	16.20	*

a See table of "Mixtures substantially complying with guarantees."

* Seriously deficient in available phosphoric acid.

Mixtures Substantially Complying with Guarantees

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Agricultural Products		
Apco Plant Food 5-10-5	1	—
Apco Rose Food 5-12-4	1	—
Apco Country Club 8-6-2	1	1.03
American Agricultural Chemical Co.		
AA Fertilizer 0-15-30	2	—
AA Fertilizer 0-20-20	2	—
AA Fertilizer 4-12-16	2	—
AA Fertilizer 5-8-10	3	—
AA Fertilizer 5-10-10, 2% magnesium oxide	2	—
AA Fertilizer 6-8-8	1	—
AA Fertilizer 8-8-8	2	—
AA Fertilizer 8-12-12	1	—
AA Fertilizer 8-16-16	3	—
AA Fertilizer 10-10-10	1	—
Agrico Phosphate & Potash 0-20-20	1	—
Agrico for Seeding Down 3-12-12	1	—
Agrico for Corn 4-12-8	2	—
Agrico for New England 5-8-7	4	—
Agrico Rose Food 5-9-6	1	2.01
Agrico for Gardens 5-10-5	1	—
Agrico for Onions 5-10-5	1	—
Agrico for Truck 5-10-5	2	—
Agrico for Potatoes 5-10-10, 2% Magnesium oxide	5	—
Agrico for Tobacco 6-3-6	2 ^a	2.66
Agrico for Turf 6-8-2	2	2.47
Agrico for Broadleaf Evergreens 6-10-4	2	.86
Agrico Country Club 6-10-4	2	.46
Agrico for Lawns Trees & Shrubs 6-10-4	3	.45
Agrico for Top Dressing 7-7-7	2	—
Agrico Country Club 8-6-4	2	1.30
Agrico for New England 8-12-12	3	—
Agrico for Turf 10-6-4	2	4.23
Agrico for Top Dressing 10-10-10	2 ^b	—
Armour Fertilizer Works		
Armour's Big Crop 0-20-20	1	—
Armour's Big Crop 5-8-7	3	—
Armour's Big Crop 5-10-5	2	—
Armour's Big Crop 5-10-10	2	—
Armour's Big Crop 5-10-10, 2% magnesium oxide	3	—
Armour's Big Crop 7-7-7	4	—
Armour's Big Crop 8-16-16	1 ^b	—
Armour's Big Crop 10-10-10	2	—
Armour's Gold Bond Tobacco Grower 6-3-6	2 ^a	2.68
Armour's Vertagreen Plant Food 5-10-5	3	—
Armour's Vertagreen Plant Food for Commercial Crops 6-12-6	1	—
Armour's Vertagreen Plant Food for Commercial Crops 6-12-12	1 ^b	—
Armour's Vertagreen Plant Food for Commercial Crops 8-8-8	3	—
Armour's Vertagreen Plant Food for Turf & Trees 10-6-4	2	1.61

^a Potash in forms other than muriate.

^b See table of "Mixtures showing a commercial shortage of \$1 or more per ton."

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Atlas Fish Fertilizer Co.		
Atlas Fish Emulsion Fertilizer 5-1-1.....	1	—
F. A. Bartlett Tree Expert Co.		
Bartlett Green Tree Food 6-8-6.....	1	.94
Baugh & Sons Co.		
Baugh's Premium Plant Food & Soil Builder 5-10-5.....	1	—
Baugh's Premium Plant Food & Soil Builder 5-10-10.....	1	—
Baugh's 8-16-16.....	1	—
Baugh's Premium Plant Food & Soil Builder 10-10-10.....	2	—
Joseph Breck & Sons Corp.		
Breck's Garden-Gro 5-10-10, 2% magnesium oxide.....	1	—
Breck's Turf-Gro 8-6-2.....	1	1.52
Breck's Velturf 10-6-4 (all organic).....	1	6.57
Breck's Quick-Life 16-32-16.....	1	—
California Spray-Chemical Corp.		
Ortho Lawn Groom 7-11-5.....	1	—
Ortho Gro Liquid Plant Food 10-5-5.....	1	—
Carac Corp		
Carac Rose and Plant Fertilizer 22-18-22.....	1	—
Carac Evergreen and Shrub Fertilizer 25-15-20.....	1	—
Carac Balanced Lawn Fertilizer 30-10-14.....	1	—
Carboia Chemical Co., Inc.		
CCC Triple 20 Plant Food 20-20-20.....	1	—
Chesnicka Landscape Service		
Chesnicka Sod Builder 9-7-4.....	2	2.72
Clinton Nurseries		
New Era African Violet Food 5-12-9.....	1	—
New Era Vitamin Plant Food 7-15-8.....	1	—
Consolidated Rendering Co.		
Corenco 0-15-30.....	1	—
Corenco 0-20-20.....	2 ^b	—
Corenco 4-12-16.....	1	—
Corenco 5-8-7.....	4	—
Corenco 5-8-10.....	1	—
Corenco 5-10-5.....	1	—
Corenco 5-10-5 Home Garden.....	4	—
Corenco 5-10-5 Rose Special.....	4	1.25
Corenco 5-10-10.....	4	—
Corenco 5-10-10 Liquid Fertilizer Concentrate.....	1	—
Corenco 5-10 10, 1% water soluble magnesium oxide.....	2	—
Corenco 5-10-10, 2% water soluble magnesium oxide.....	1	—
Corenco 6-3-6 Peerless.....	1 ^a	3.49
Corenco 7-7-7.....	4	—

^a Potash in forms other than muriate.

^b See table of "Mixtures showing a commercial shortage of \$1 or more per ton."

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Consolidated Rendering Co.—Continued		
Corenco Rhododendron, Azalea, Blueberry Special 7-7-7.....	2	—
Corenco 8-6-4 Landscape.....	4	.44
Corenco 8-6-4 Turf Green.....	2	2.86
Corenco 8-16-16.....	3	—
Corenco 10-5-5 Liquid Green.....	1	—
Corenco 10-6-4.....	3	—
Corenco 10-10-10.....	3 b	—
Davison Chemical Co.		
0-15-30 Davco Granulated Fertilizer.....	1	—
5-10-5 Granulated Turf & Garden Food (Premium).....	1	—
5-10-10 Davco Granulated 3G Fertilizer.....	1	—
7-7-7 Davco Granulated Fertilizer.....	1	—
8-16-16 Davco Granulated 3G Fertilizer.....	1	—
10-10-10 Davco Granulated 3G Fertilizer.....	1	—
Doggett-Pfeil Co.		
XL-36 12-12-12.....	1	—
XL-60 15-30-15.....	1	—
XL-40 20-0-20.....	1	—
Doughton Seed Co.		
Doughton's Lawn Food 9-8-3.....	1	1.59
E. I. du Pont de Nemours & Co.		
Du Pont Soluble Plant Food 19-22-16.....	1	—
Eastern States Farmers' Exchange, Inc.		
Eastern States 0-15-30 with Boron 0.2%.....	4	—
Eastern States 0-25-25.....	2	—
Eastern States 5-10-10, 2% magnesium oxide.....	4	—
Eastern States 8-4-8 Tobacco, 2% magnesium oxide.....	2 a	3.04
Eastern States 8-12-12, 2% magnesium oxide.....	2	—
Eastern States 8-12-12 L.C., 2% magnesium oxide.....	1 a	—
Eastern States 8-12-12 L.C., 2% magnesium oxide.....	1 c	—
Eastern States 8-16-16, 1% magnesium oxide.....	5	—
Eastern States 10-5-5, 2% magnesium oxide.....	4	5.76
Eastern States 10-10-10, 1% magnesium oxide.....	5	—
Eastern States 10-10-10 SM, 2% magnesium oxide.....	2	—
Eastern States Starter 64 16-32-16.....	1	—
Essex County Cooperative Farming Association		
S-X Brand 5-8-7.....	2	—
S-X Brand 5-10-10, 1% water soluble magnesium oxide.....	1	—
S-X Brand 5-10-10, 2% water soluble magnesium oxide.....	2	—
S-X Brand 7-7-7.....	2	—

a Potash in forms other than muriate.

b See table of "Mixtures showing a commercial shortage of \$1 or more per ton."

c Potash in forms other than muriate, 10.70%: potash as muriate, 2.15%.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Faesy & Bestoff, Inc.		
F & B Broadleaf High Organic 6-10-4	1	1.48
F & B All-Purpose Pelletized 6-12-6	1	—
F & B Rose Food 8-10-4	1	2.56
F & B Starter-Grower 15-30-15	1	—
Farm Bureau Association		
Farm Bureau 5-8-7, 2% magnesium oxide	2	—
Farm Bureau 5-10-10, 1% magnesium oxide	1	—
Farm Bureau 5-10-10, 2% magnesium oxide	2	—
Farm Bureau 7-7-7, 2% magnesium oxide	2	—
Farm Bureau 8-6-2	2	1.71
Farm Bureau 8-16-16	1	—
Farm Bureau 10-10-10, 1% magnesium oxide	1	—
Forward House Div., Olin Mathieson Chemical Corp.		
Plantrons 12-24-12	1	—
Frank's Market Garden		
For More Growth (FMG) .9-.9-.9	1	—
Frost & Higgins Co.		
Frost & Higgins Tree Food 8-6-4	1	3.47
Garfield Williamson, Inc.		
Plantspur 4-4-2	1	.93
Wonderlawn Lawn Food 10-6-4	1	1.52
Glorion Div., Aluminum and Chemical Corp.		
Glorion 4-8-8	2	—
Goulard & Olena, Inc.		
G&O Tomato Food 3-12-13	1	—
G&O Mr. Strawberry Big 3-13-7 (old stock)	1	—
G&O Rhodo-Azalea Food 3-20-3	1	1.41
G&O Bulb Food 5-6-15	1	—
G&O Prizegro 5-10-5	1	—
G&O Evergreen Tree Shrub Food 9-7-4	1	1.20
Heller Greenhouse Laboratories		
Heller-Gro 15-15-15	1	—
A. H. Hoffman, Inc.		
Hoffmzn Azalea and Evergreen Food 4-6-10	1	1.65
Hoffman Rose Food 5-10-5	1	—
Hubbard-Hall Chemical Co.		
Greenlawn Fertilizer 8-6-4	1	2.04
Gro-Fast Evergreen Food 4-10-4	1	1.07
Gro-Fast Plant Food 5-10-5	2	1.20
Gro-Fast Rose Food 7-10-5	1	1.63
Hubbard Top Dressing 7-7-7	1	—
Hubbard Golf Course Fertilizer 8-6-2	1	1.76
Liberty Fertilizer 0-20-20	1	—
Liberty High Grade Market Gardeners 5-8-7	2	—
Liberty 5-10-5	1	—

Mixtures Substantially Complying with Guarantees - Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Hubbard-Hall Chemical Co.—Continued		
Liberty 5-10-10.....	4	—
Liberty Tobacco Mixture 6-3-6.....	1 <i>a</i>	2.11
Liberty Tobacco 6-3-6, 2% magnesium oxide.....	1 <i>a</i>	2.88
Liberty Green-Gro 6-7-4.....	2	1.09
Liberty Super Spud Special 6-8-8, 2% magnesium oxide.....	2 <i>a</i>	—
Liberty Super Spud Special 6-8-8, 2% magnesium oxide.....	1 <i>d</i>	—
Liberty 7-7-7.....	2	—
Liberty 8-16-16.....	2	—
Liberty 10-10-10.....	2	—
Old Deerfield 0-10-30.....	1	—
Old Deerfield 0-15-30.....	1	—
Old Deerfield 0-20-20.....	2	—
Old Deerfield 4-12-16.....	2	—
Old Deerfield 5-5-15 Tobacco Starter.....	1 <i>a</i>	—
Old Deerfield 5-5-15 Tobacco Starter.....	1 <i>e</i>	—
Old Deerfield 5-8-7 All Crop.....	3	—
Old Deerfield Trucker's Special 5-10-5.....	2	—
Old Deerfield 5-10-10 Potato Fertilizer.....	2	—
Old Deerfield 5-10-10, 2% magnesium oxide, potash other than muriate.....	2 <i>a</i>	—
Old Deerfield Tobacco 6-3-6, 2% magnesium oxide.....	3 <i>a</i>	3.32
Old Deerfield Lawnshrub 6-5-5.....	2	1.57
Old Deerfield 6-8-8.....	1	—
Old Deerfield 7-7-7.....	2	—
Old Deerfield Green Lawn 8-6-4.....	3	2.29
Old Deerfield 8-8-8.....	2	—
Old Deerfield 8-12-12, 2% magnesium oxide.....	2 <i>a</i>	—
Old Deerfield 8-16-16.....	1	—
Old Deerfield 10-10-10.....	2	—
Hydroponic Chemical Co., Inc.		
Hydroponic 7-6-19.....	1	—
Hy-Trous Corp.		
Hy-Trous 4-8-4.....	1	—
International Minerals & Chemical Corp.		
Fertilis Home Garden 5-10-5, 2% magnesium oxide.....	2	—
Fertilis 8-6-2, 1% water soluble magnesium oxide.....	2	1.57
International 0-10-20.....	1	—
International 4-12-16, 1% magnesium oxide.....	1	—
International 5-8-7, 1% magnesium oxide.....	3	—
International 5-10-5, 1% magnesium oxide.....	3	—
International 5-10-10, 1% magnesium oxide.....	3	—
International Potato 5-10 10, 2% water soluble magnesium oxide.....	3	—

a Potash in forms other than muriate.

d Potash in forms other than muriate, 7.44%: potash as muriate, 1.96%.

e Potash in forms other than muriate, 16.01%: potash as muriate, 2.59%.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
International Minerals & Chemical Corp.—Continued		
International 6-3-6 Tobacco, 2% magnesium oxide.....	1 <i>a</i>	2.93
International 6-8-8.....	1	—
International Rainbow 6-12-12, 2% water soluble magnesium oxide.....	1	—
International 7-7-7, 1% magnesium oxide.....	3	—
International 8-8-8.....	2	—
International 8-16-16.....	2	—
International 10-10-10, 1% magnesium oxide.....	2	—
International Rainbow 10-10-10, 5% water soluble magnesium oxide.....	1	—
Kapco Div., Summers Fertilizer Co., Inc.		
Plant-L-Izer 15-30-15 Soluble Fertilizer.....	1	—
Lebanon Chemical Corp.		
Plant Food 5-10-5.....	1	—
Azalea Food 7-7-7.....	1	—
Lee Patten Seed Co.		
Patco's Lawn Food 9-8-3	1	1.53
O. E. Linck Co., Inc.		
Linck's Fertilizer 30-18-9	1	—
John D. Lyon, Inc.		
Lyon Old New England 6-8-3	2	5.67
Monsanto Chemical Co.		
Folium 20-20-20.....	1	—
Old Fox Agricultural Sales, Inc.		
Old Fox Brand 0-15-30.....	1	—
Old Fox Brand 4-16-20.....	1	—
Old Fox Brand 5-8-7.....	2	—
Old Fox Brand Garden Food 5-10-5.....	1	—
Old Fox Brand 5-10-10.....	3	—
Old Fox Brand 5-10-10, 2% water soluble magnesium oxide..	3	—
Old Fox Brand 6-3-6 Tobacco Fertilizer, 2% magnesium oxide (1000 lbs. cottonseed meal per ton).....	1 <i>a</i>	3.05
Old Fox Brand 7-7-7.....	4	—
Old Fox Brand Turf Food 8-6-2	2	1.83
Old Fox Brand 8-6-2 with 2.5% chlordane (<i>f</i>)	1	1.22
Old Fox Brand 8-12-12, 1.5% water soluble magnesium oxide	1	—
Old Fox Brand 10-10-10.....	1	—
Olds & Whippie, Inc.		
O & W 5-8-7 Potato General Purpose.....	2	—
O & W 5-10-10 Potato Fertilizer.....	2	—
O & W 5-10-10 Potato Fertilizer, 2% magnesium oxide.....	1	—
O & W 6-3-6 Blue Label Tobacco, potash derived from cotton hull ash	1 <i>a</i>	3.46
O & W 7-7-7 Top Dresser & Grass Fertilizer	2	—

a Potash in forms other than muriate.

f Chlordane found, 1.8%.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Parkes Barnes, Inc.		
Black Magic Plant Food (in tablet form) 2-3-2	1	—
Black Magic African Violet Blossom Booster (liquid) 4-10-10	1	—
Black Magic Liquid Fertilizer 10-5-5	1	—
Penn Co.		
Ferti-Flora 3-3-3	1	—
Plant Products Corp.		
Plant Prod. "20" 20-20-20	1	—
Plantabbs Corp.		
Plantabbs 11-15-20	1	—
Ra-Pid-Gro Corp.		
Ra-Pid-Gro 23-21-17	1 b	—
Rose Manufacturing Co.		
Tri Ogen Rose Food 5-10-5	1	—
O. M. Scott & Sons Co.		
Scotts Organic Fertilizer 5-2-3	1	3.49
Scotts Weed & Feed 7-11-5	1	2.74
Scotts Turf Builder 9-7-4	1	1.88
Scotts Improved Turf Builder 20-10-5	1	—
Sears, Roebuck & Co.		
Cross Country Bulb Food 4-12-8	2	—
Cross Country Plant Food 5-10-5	1	—
Cross Country Rose Food 5-10-5	2	—
Cross Country Azalea-Camellia Food 7-7-7	1	—
Cross Country Evergreen Food 10-6-4	1	—
Cross Country Instant Tomato Food 15-30-15	1	—
Cross Country Instant Plant Food 20-20-20	1	—
Cross Country Instant Rose Food 20-20-20	1	—
M. L. Shoemaker Co.		
Shoemaker's Swift-Sure 4-10-0	1	—
Stim-U-Plant Laboratories, Inc.		
Stim-U-Plant African Violet Food 5-8-7	1	—
Stim-U-Plant Food Tablets 11-12-15	1	—
Swift & Co., Plant Food Div.		
Swift's Special Golt 8-6-4	1	.54
Vigoro for Camellias & Azaleas 5-10-10	1	—
Golden Vigoro 6-10-4	1	2.98
Vigoro Complete Plant Food 6-10-4	2	.38
Vigoro Plus Chlordane 6-10-4 (g)	1	—

b See table of "Mixtures showing a commercial shortage of \$1 or more per ton."

g Chlordane found, .33%; guaranteed, .40%.

Mixtures Substantially Complying with Guarantees -Concluded

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Taft Oil Co., Inc.		
Super Lawn Liquid Fertilizer 11-8-4	1	—
Universal Chemical Co.		
Electric Plant Food 5-10-3	1	2.15
Stay-Green Lawn Food 8-6-2	1	2.29
Hydropon 10-12-25	1	—
Liquid M 17-24-17	1	—
Valley Feed & Supply Co., Inc.		
Adorna 3-1-1	1	—
Winslow Nurseries, Inc.		
Winslow's All Purpose Green Valley Plant Food 5-10-5	2	—
Winslow's Green Valley High Organic Turf Food 8-6-2	1	1.42
F. H. Woodruff & Sons, Inc.		
Gro-Sod Lawn Food 10-6-4	1	2.16

NITROGEN COMPOUNDS

Manufacturer and Brand	Nitrogen	
	Found	Guaranteed
American Agricultural Chemical Co.		
Agritite.....	7.01	7
Agritite.....	7.45	7
Agritite.....	7.31	7
Agritite.....	7.07	7
American Cyanamid Co.		
Aero Cyanamid, Granular.....	21.30	21
Aero Cyanamid, Granular.....	21.03	21
Aero Cyanamid, Special Grade.....	22.75	21
Lawn and Garden Cyanamid.....	20.86	21
Aeroprills, Ammonium Nitrate Fertilizer.....	33.5	33.5
Bonide Chemical Co.		
Bonide Quick-Green Concentrate Nitrogen for Lawns.....	46.36	46
Borden Co., Chemical Division		
Borden's "38".....	38.70	38
Borden's "38".....	39.10	38
Borden's "38".....	38.60	38
Borden's "38".....	39.50	38
Carac Corp.		
Carac (Hyeon).....	46.24	46
Carac (Hyeon).....	46.43	46
Chilean Nitrate Sales Corp.		
Chilean Nitrate of Soda—Champion Brand.....	16.07	16
Chilean Nitrate of Soda—Champion Brand.....	16.03	16
Chilean Nitrate of Soda—Champion Brand.....	16.01	16
Consolidated Rendering Co.		
Sulphate of Ammonia.....	21.01	20.5
E. I. du Pont de Nemours & Co.		
Du Pont Nu Green Fertilizer Compound.....	45.39	45
Du Pont Uramite Fertilizer Compound.....	38.72	38
Du Pont Uramite Fertilizer Compound.....	37.58	38
Eastern States Farmers' Exchange, Inc.		
Castor Pomace.....	6.00	5.5
Sulphate of Ammonia.....	21.14	20.5
Faesy & Besthoff, Inc.		
F & B Nitrate of Soda.....	16.13	16
F & B Sulphate of Ammonia.....	20.75	20.5
Garfield Williamson, Inc., Town & Country Products Div.		
Green Pride Lawn Food.....	45.35	45
Goulard & Olena, Inc.		
C & O Nitrate of Soda.....	16.00	16
Humphreys-Godwin Co.		
Dixie Brand 41% Cottonseed Meal.....	6.56	6.56
Spencer Kellogg & Sons, Inc.		
Castor Pomace.....	6.13	5.5
O. E. Linck Co., Inc.		
Linck's 46% Nitrogen.....	46.38	46

NITROGEN COMPOUNDS—Continued

Manufacturer and Brand	Nitrogen	
	Found	Guaranteed
L. B. Lovitt & Co.		
Lovit Brand 41% Cottonseed Meal.....	6.67	6.56
McKesson & Robbins, Inc.		
Calcium Nitrate.....	15.21	15.5
Nitrogen Division, Allied Chemical & Dye Corp.		
Arcadian Pelleted Ammonium Nitrate.....	33.75	33.5
Arcadian Nitrate of Soda.....	16.32	16
Arcadian Urea 45% Fertilizer Compound (Pelleted).....	45.48	45
Arcadian Urea 45% Fertilizer Compound (Pelleted).....	45.73	45
Old Fox Agricultural Sales, Inc.		
Old Fox Brand Organo.....	5.00	5
Old Fox Brand Organo.....	5.28	5
O. M. Scott & Sons Co.		
Scotts New Weed & Feed.....	25.5	25
Sears, Roebuck & Co.		
Cross Country Sulphate of Ammonia.....	20.92	20.5
Sudbury Laboratory		
High Analysis Nitrogen.....	45.85	40
Brand Seriously Deficient		
E. I. du Pont de Nemours & Co.		
Du Pont Uramite Fertilizer Compound.....	36.95	38

PRODUCTS SUPPLYING ORGANIC NITROGEN AND PHOSPHORIC ACID

Manufacturer and Brand	Total Nitrogen Found	Total Phosphoric Acid		Available Phosphoric Acid	
		Found	Guaran- teed	Found	Guaran- teed
Agricultural Products					
Apco Organic Lawn Food 5-3	5.10	—	—	4.40	3.0
Apco Bone Meal 2.25-20	1.53	32.50	20.0	—	—
American Agricultural Chemical Co.					
Bone Meal 1.5-25	2.63	27.80	25	—	—
Armour Fertilizer Works					
Armour's All Organic 5-5	5.11	—	—	5.35	5.0
Armour's All Organic 5-5	5.02	—	—	5.00	5.0
Armour's Bone Meal 2.3-23	2.35	25.80	23.0	—	—
Joseph Breck & Sons Corp.					
Breck's Greenite 5-4	5.36	—	—	4.75	4.0
Consolidated Rendering Co.					
Corenco Organic Turf Fertilizer 4.75-4	5.24	—	—	4.25	4.0
Corenco Ground Bone 2-22	2.11	28.40	22.0	—	—
Corenco Ground Bone 2-22	2.42	28.30	22.0	—	—
Corenco Ground Bone 2-22	2.33	28.50	22.0	—	—
Faesly & Besthoff, Inc.					
F & B Pure Steamed Bone Meal 2.47-23	2.92	29.30	23.0	—	—
Fiestar, Inc.					
Fiestar 2-2	2.13	3.00	—	2.80	2.0
Goulard & Olen, Inc.					
G & O Ground Bone 2.4-20	2.17	28.20	20.0	—	—
Hubbard Hall Chemical Co.					
Gro-Fast All Organic Fertilizer 5-4	5.32	—	—	4.40	4.0
Old Deerfield Tru Organic Lawn Fertilizer 5-4	5.17	—	—	4.70	4.0
Old Deerfield Tru Organic Lawn Fertilizer 5-4	5.21	—	—	5.00	4.0
Gro-Fast Bone Meal 2-23	2.41	27.90	23.0	—	—
Old Deerfield Fine Ground Bone 2-22	2.24	28.80	22.0	—	—
International Minerals & Chemical Corps					
International Mello Green 5-4	5.00	—	—	4.90	4.0
International Bone Meal 2.47-23	2.89	24.80	23.0	—	—
Lawn-Tex, Inc.					
Organic Green 5-5	5.37	—	—	5.10	5.0
Lebanon Chemical Corp.					
Bone Meal 2.3-20	4.77	22.65	20.0	—	—
John Reardon & Sons					
Rearco Ground Bone 2.47-22.88	5.53	20.75	22.88	—	—
Sears, Roebuck & Co.					
Cross Country Lawn Food 5-5	5.08	5.85	—	5.09	5.0
Cross Country Lawn Food with Weed K. M. 5-5	4.84	5.90	—	5.06	5.0
Cross Country Bone Meal 2-23	2.51	28.70	23.0	—	—
Cross Country Bone Meal 2-26	2.12	29.10	26.0	—	—
Sewerage Commission of the City of Milwaukee					
Milorganite 5.5-4	6.00	4.76	4.75	4.00	4.0
Milorganite 5.5-4	5.93	4.70	4.75	4.34	4.0
Milorganite 5.5-4	5.91	4.62	4.75	4.00	4.0
Swiss Farms, Inc.					
Bone Meal 3-20	3.17	26.6	20.0	—	—

a Chlordane found, .33%; guaranteed, .40%

PHOSPHORIC ACID COMPOUNDS

Manufacturer and Brand	Total Phosphoric Acid	Available Phosphoric Acid	
		Found	Guaranteed
American Agricultural Chemical Co.			
Ground Phosphate Rock.....	31.10 ^a	—	—
18% Normal Superphosphate.....	—	18.40	18
18% Normal Superphosphate.....	—	18.45	18
18% Normal Superphosphate.....	—	18.40	18
Consolidated Rendering Co.			
Corenco Superphosphate 20%.....	—	20.50	20
Davison Chemical Co.			
Davco Granulated 20% Superphosphate.....	—	20.75	20
Davco Granulated 20% Superphosphate.....	—	20.85	20
Eastern States Farmers' Exchange, Inc.			
20% Superphosphate.....	—	20.80	20
20% Superphosphate.....	—	20.45	20
Faesy & Besthoff, Inc.			
F & B Superphosphate 20%.....	—	21.35	20
Farm Bureau Association			
Farm Bureau 20% Superphosphate.....	—	20.80	20
Farm Bureau 20% Superphosphate.....	—	20.25	20
Hubbard-Hall Chemical Co.			
Old Deerfield Superphosphate 20%.....	—	21.35	20
Old Deerfield Superphosphate 20%.....	—	20.85	20
Hubbard Superphosphate 20%.....	—	20.30	20
International Minerals & Chemical Corp.			
International Superphosphate 20%.....	—	20.40	20
International Superphosphate 20%.....	—	20.25	20
International Superphosphate 20%.....	—	20.95	20
Monsanto Chemical Co.			
Mono Calcium Phosphate.....	—	56.00	—
Sudbury Laboratory			
High Analysis Phosphorus.....	—	47.64	40

Brands Seriously Deficient

Armour Fertilizer Works			
Armour's Big Crop Superphosphate 20%.....	19.10	18.10*	20
Armour's Big Crop Superphosphate 20%.....	21.45	19.40*	20
Goulard & Olen, Inc.			
G & O Superphosphate 20%.....	20.50	18.86	20

^a Guaranteed 30% total phosphoric acid.

* Approximate commercial shortage per ton, \$3.80 and \$1.20, respectively.

POTASH COMPOUNDS

Manufacturer and Brand	Water Soluble Potash	
	Found	Guaranteed
Armour Fertilizer Works		
Muriate of Potash	60.96	60.0
Consolidated Rendering Co.		
Muriate of Potash	61.92	60.0
Eastern States Farmers' Exchange, Inc.		
Muriate of Potash	62.40	60.0
Faesy & Besthoff, Inc.		
Muriate of Potash	61.44	60.0
Goulard & Oleno, Inc.		
Muriate of Potash	60.96	60.0
Hubbard-Hall Chemical Co.		
Muriate of Potash	62.00	60.0
Muriate of Potash	62.02	60.0
International Minerals & Chemical Corp.		
Muriate of Potash	61.44	60.0
Muriate of Potash	61.44	60.0
Muriate of Potash	60.00	60.0
Sudbury Laboratory		
Potash 40%	48.65	40.0

PULVERIZED ANIMAL MANURES

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Organic Matter	Sand and Inert Matter*	Microscopic Examination
Agricultural Products						
Apco Sheep Manure (1.5 - 3.2).....	1.80	.55	3.54	35.1	49.0	Mislabeled. Product is mostly wood splinters and inert matter.
American Agricultural Chemical Co.						
Sheep Manure (1.25 - 1.2).....	1.36	1.75	4.27	36.1	42.2	Mislabeled. A mixture of sheep manure and inert matter
Armour Fertilizer Works						
Armour's Shredded Cattle Manure (1.85) 3.75-1.75).....	1.93	1.00	1.90	57.2	27.9	As represented.
Armour's Shredded Cattle Manure (2-1-2).....	2.30	1.00	2.76	65.0	22.2	As represented.
Armour's Shredded Cattle Manure (2-1-2).....	2.04	1.40	2.42	67.4	20.2	As represented.
Armour's Pulverized Sheep Manure (1-1-2).....	1.44	1.35	4.72	38.5	39.3	Mislabeled. Product is sheep manure and inert matter.
Armour's Pulverized Sheep Manure (1.25 - 1.2).....	1.42	1.30	4.25	39.7	37.4	Mislabeled. Product is sheep manure and inert matter.
Armour's Pulverized Sheep Manure (1.25 - 1.2).....	1.65	1.40	4.80	41.0	35.4	Mislabeled. Product is sheep manure and inert matter.
Armour's Pulverized Sheep Manure (1.25 - 1.2).....	1.29	1.25	4.05	33.5	44.3	Mislabeled. Product is sheep manure and inert matter.
Armour's Pulverized Sheep Manure (1.25 - 1.2).....	1.46	1.40	4.62	36.0	41.9	Mislabeled. Product is sheep manure and inert matter.
Armour's Pulverized Sheep Manure (1.25 - 1.2).....	1.43	1.25	4.33	32.0	45.7	Mislabeled. Product is sheep manure and inert matter.
Armour's Pulverized Sheep Manure (1.25 - 1.2).....	1.44	1.30	4.53	37.9	39.2	Mislabeled. Product is sheep manure and inert matter.
Atkins & Durbrow, Inc.						
Atkins (3-2-1).....	3.61	2.70	2.70	68.7	7.4	A good grade of poultry manure.
Buell Fertilizer Co.						
Buell Peat Poultry Manure (3-3-1.5).....	3.73	3.10	2.64	67.3	5.1	As represented.
Consolidated Rendering Co.						
Corenco Spurz-On (3 - 2.5 - 1).....	3.75	3.65	2.53	68.0	6.6	Mainly poultry manure.
Corenco Sheep Manure (2-1-2).....	2.00	1.30	2.67	58.0	22.8	As represented.
Corenco Sheep Manure (2-1-2).....	1.72	1.10	2.25	51.7	33.9	Mislabeled. A mixture of sheep manure and inert matter.
Corenco Sheep Manure (1.25 - 1.2).....	1.33	1.75	4.10	33.9	45.2	Mislabeled. Product is sheep manure and inert matter.
Corenco Sheep Manure (1.25 - 1.2).....	1.71	1.60	5.19	43.5	31.1	Mislabeled. Product is sheep manure and inert matter.

* Manufacturers of products containing more than 30% sand and inert matter were requested to relabel product or remove it from sale.

PULVERIZED ANIMAL MANURES—Continued

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Organic Matter	Sand and Inert Matter	Microscopic Examination
Gouldard & Olenz, Inc. G & O Cow Manure (1.85 - .75 - 1.75)	1.52	1.25	2.50	34.9	49.2	Mislabeled. Cattle manure and inert matter. Withdrawn from sale.
A. H. Hoffman, Inc. Hoffman Cow Manure (2-1-1)	2.04	1.00	2.33	83.7	2.1	As represented.
Hoffman Sheep Manure (1.25 - 1.2)	1.43	1.50	4.13	39.5	39.2	Mislabeled. Product is a mixture of sheep manure and inert matter.
Hoffman Sheep Manure (1.5 - 1-2)	1.96	1.20	3.36	52.0	29.1	Mislabeled. Product is a mixture of cattle and sheep manure.
Hubbard-Hall Chemical Co. Geo-East Cow Manure (2-1-1)	2.23	1.00	2.80	82.2	2.0	As represented.
Geo-East Cow Manure (2-1-1)	1.50	1.20	2.73	30.7	51.2	Mislabeled. Product is a mixture of cow manure and inert matter.
Geo-East Cow Manure (2-1-1)	1.42	1.25	2.46	33.9	48.6	Mislabeled. Product is a mixture of cow manure and inert matter.
Geo-East Sheep Manure (1.25 - 1-2)	1.87	1.00	2.45	30.0	37.1	Mislabeled. A mixture of sheep manure and inert matter.
Geo-East Sheep Manure (1.25 - 1-2)	1.40	1.30	4.92	40.6	34.7	Mislabeled. A mixture of sheep manure and inert matter.
Geo-East Sheep Manure (1.25 - 1-2)	1.35	1.15	4.68	36.7	40.9	Mislabeled. A mixture of sheep manure and inert matter.
Lebanon Chemical Corp. Cow Manure (1.5 - 1-2)	2.79	1.40	3.06	59.6	19.2	As represented.
Farmrite Sheep Manure (2-1-1)	2.16	1.20	2.00	46.0	29.3	Mislabeled. Product is a mixture of sheep and cattle manure.
Maegoo Farms, Inc. Fertal Geo Cow Manure (1-1-1)	81	65	1.46	69.6	13.8	As represented.
Fertal Geo Cow Manure (1-1-1)	1.00	70	1.80	75.1	9.0	As represented.
Fertal-Geo Cow Manure (1-1-1)	1.63	1.00	1.70	73.5	10.7	As represented.
Gardner's Gold Cattle Manure (1-1-1)	1.47	1.08	9.66 ⁸⁸	68.1	4.1	As represented.
Natural Plant Food Co. Longhorn Brand Cattle Manure (2-1-2)	2.00	1.00	2.36	54.4	29.5	As represented.
Longhorn Sheep Manure (2-1-2)	2.42	1.00	2.36	58.1	24.3	Mislabeled. Product is cattle manure.
Ramshorn Brand Sheep Manure (2-1-2)	2.27	1.00	2.37	58.2	24.0	Mislabeled. Mostly cattle manure mixed with sheep manure.

⁸⁸ Manufacturers of products containing more than 30% sand and inert matter were requested to relabel product or remove it from sale.
Bedding used is tobacco stems which has a high potash content.

PULVERIZED ANIMAL MANURES—Concluded

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Organic Matter	Sand and Inert Matter*	Microscopic Examination
Premier Peat Moss Corp. Premier Hydrated Cow Manure (2-1-1).....	2.29	1.70	2.03	76.7	6.1	Found to be a mixed fertilizer. Withdrawn from sale.
Sears, Roebuck & Co. Cross Country Cattle Manure (1.5 - .75-2).....	1.55	.85	2.10	35.4	42.8	Mislabeled. This is a mixture of cattle manure and inert matter.
Cross Country Cattle Manure (1.5 - .75-2)	1.72	.75	2.30	38.0	32.8	Mislabeled. Product is cattle, sheep manure and inert matter.
Cross Country Sheep Manure (1.5 - .75-2).	2.17	.75	1.74	52.5	23.0	Mislabeled. Sample is cattle manure.
Cross Country Sheep Manure (1.5 - .75-2)	2.23	.75	3.42	68.6	23.5	Mislabeled. Product is mixture of sheep and cattle manure.
Swiss Farms, Inc. Cow Manure (2-1-1)	2.00	1.20	1.74	59.3	12.3	As represented.
Thomson Nursery Thomson's Cow Manure (.5 - .25 - .2) .....	.50	.25	.63	22.7	5.4	As represented.
Trimble A Mills Sure Gro Poultry Manure (3.25 - 2.5 - 1.5)....	4.43	2.65	2.64	72.7	1.4	As represented.
Walker-Gordon Laboratory Co. Bovung (2-1-1)	2.00	1.55	2.52	79.4	3.3	As represented.
Bovung (2-1-1)	2.25	1.00	2.33	83.6	1.7	As represented.
Bovung (2-1-1)	2.03	1.20	2.23	85.1	2.1	As represented.
Bovung (2-1-1)	2.13	1.10	2.46	81.8	2.7	As represented.
Bovung (2-1-1)	1.83	1.05	2.33	80.6	2.1	As represented.

* Manufacturers of products containing more than 30% sand and inert matter were requested to relabel product or remove it from sale.

AGRICULTURAL LIME PRODUCTS

Manufacturer and Brand	Calcium Oxide (CaO)		Magnesium Oxide (MgO)		Analyzing Expressed in Terms of Calcium Oxide	Insoluble Matter	Mechanical Analysis Per Cent	
	Found	Guaranteed	Found	Guaranteed			Finer than 100-mesh	Coarser than 20-mesh
Adams Hydrate Co. Fertility Hydrated Land Lime	62.4	60	.6	5	60.8	2.7	—	—
	28.7	30	19.0	18.0	52.9	10.8	66.0	—
	49.8	34	2.8	1.5	51.9	6.6	57.0	2.0
Conklin Limestone Co., Inc., Canaan, Conn. High Magnesium Agricultural Ground Limestone	64.9	60	2.7	1.0	66.7	2.0	—	—
	43.6	40	30.7	25.0	84.6	7	—	—
Conklin Limestone Co., Inc., Lincoln, R. I. Lawn & Garden Limestone	47.2	45	31.9	30.0	89.5	8	—	—
	46.3	43	31.6	30.0	90.5	1.7	—	—
A. H. Hoffman, Inc. Hoffman Hydrated Lime	40.0	38	8.5	8.0	49.1	12.4	—	—
	30.5	30	20.9	20.0	58.9	2.4	51.4	0.1
Hubbard-Hall Chemical Co. Gro-Fast Hydrated Lime	31.7	30	20.7	20.0	58.9	1.178	48.5	15.2
	40.4	35	8.2	5.0	50.7	1.014	93.4	—
Lee Lime Corp. Lee ABC Hydrate—General Purpose	43.1	45	30.3	30.0	84.3	1.686	—	—
	37.6	35	27.8	25.0	74.5	1.2	—	—
Lee Double Strength Agricultural Hydrated Lime Lee Lawn & Garden Lime	39.5	35	27.8	25.0	76.4	1.528	—	—
Lee Pulverized Limestone Lee Pulverized Limestone—West Stockbridge								
Lee Spray Lime Tobey Agria Hydrate								
Tobey Agria Hydrate								

AGRICULTURAL LIME PRODUCTS—Concluded

Manufacturer and Brand	Calcium Oxide (CaO)		Magnesium Oxide (MgO)		Neutralizing Value Expressed in Terms of Calcium Oxide		Insoluble Matter	Mechanical Analysis (Per Cent)	
	Found	Guaranteed	Found	Guaranteed	Per Cent	Pounds in One Ton		Finer than 100-mesh	Coarser than 20-mesh
New England Lime Co. Nelsco Agricultural Hydrated Lime (Adams) Nelsco Agricultural Hydrated Lime (Canan, Conn.) Nelsco Agricultural Ground Limestone (Canan, Conn.) Nelsco Calcium Carbonate Calcide Flour (Adams) Nelsco Land Lime (Canan, Conn.)	73.2	70	1.3	.5	73.6	1,472	4	—	—
	47.6	47	31.9	31.0	90.1	1,802	6	—	—
	30.0	30	21.0	21.0	57.4	1,148	5.9	73.5	—
	53.0	52	.9	2	52.6	1,052	5.6	92.5	—
	39.1	35	25.6	25.0	72.7	1,454	1.5	—	—
Ohio Lime Co. Ohio Hydrated Lime	50.6	46.8	29.1	33.9	88.1	1,762	4	—	—
	29.6	28	9.5	9.24	24.3	486	11.2	—	—
O. M. Scott & Sons Co. Scotts Soil Improver (a)	30.1	28	21.2	18.0	58.4	1,168	2.7	51.6	1.9
	33.7	30	6	trace	65.0	—	1.8	—	—
United States Gypsum Co. Ben Franklin Agricultural Gypsum (b) Red Top General Purpose Hydrated Lime (Farnams) Red Top General Purpose Hydrated Lime (Farnams) U.S.G. Agricultural Limestone (Falls Village) U.S.G. Agricultural Limestone (Farnams) U.S.G. Cheshire Land Lime U.S.G. Kemikal Land Lime	64.2	70	1.6	trace	74.0	1,300	.6	—	—
	73.2	70	1.6	trace	74.0	1,480	.6	—	—
	49.2	30	2.8	20.0	51.9	1,038	8.2	57.3	0.2
	48.5	50.5	3.9	.25	52.9	1,058	6.0	77.3	—
	61.7	60	4.4	.25	64.4	1,288	4.9	—	—
	61.7	60	3.6	.25	64.8	1,296	5.0	—	—

(a) Calcium sulfate found, 38.55%; guaranteed 38.55%.

(b) Calcium sulfate found, 80.7%; guaranteed 64.5%.

DIRECTORY OF MANUFACTURERS WHO REGISTERED FERTILIZERS FOR SALE IN MASSACHUSETTS IN 1957

Agricultural Products, West Kingston, R. I.
 Alaska Fertilizer Co., 84 Seneca St., Seattle 1, Wash.
 American Agricultural Chemical Co., 285 River St., North Weymouth, Mass.
 American Bulb Co., 711 Third Ave., New York 17, N. Y.
 American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.
 American Liquid Fertilizer Co., Inc., 2nd St. at St. Clair, Marietta, Ohio
 Archer-Daniels-Midland Co., Minneapolis 2, Minn.
 Armour Fertilizer Works, Carteret, N. J.
 Associated Seed Growers, Inc., Asgrow Home Garden Div., 15 Main St., Cambridge, N. Y.
 Atkins & Durbrow, Inc., Port Colborne, Ont., Canada
 Atlas Fish Fertilizer Co., 1 Drum St., San Francisco 11, Cal.

F. A. Bartlett Tree Expert Co., 2770 Summer St. Stamford, Conn.
 Baugh & Sons Co., Coxsackie, N. Y.
 Better Homes Bureau, 165 East Union St., Newark, N. Y.
 Bonide Chemical Co., 382 North Genesee St., Utica 4, N. Y.
 Borden Co., Chemical Div., 350 Madison Ave., New York 17, N. Y.
 Joseph Breck & Sons Corp., 401 Summer St., Boston 10, Mass.
 Buell Fertilizer Co., Exeter, N. H.

California Spray-Chemical Corp., Lucas and Ortho Way, Richmond, Cal.
 Carac Corp., Fairfield Road, Mountain View, N. J.
 Carbola Chemical Co., Inc., Natural Bridge, N. Y.
 Chesnicka Landscape Service, 47 Broad St., Westfield, Mass.
 Chicago Stock Yards Compost Co., 503 Exchange Bldg., Chicago 9, Ill.
 Chilean Nitrate Sales Corp., 120 Broadway, New York 5, N. Y.
 Clapper Co., 1121 Washington St., West Newton 65, Mass.
 Clinton Nurseries, Clinton, Conn.
 Cloro-Spray Corp., 129 State St., Dover Del.
 Coastal Dry-Manure Corp., Dagsboro, Del.
 Cocke & Co., 208 William-Oliver Bldg., Atlanta 3, Ga.
 Consolidated Rendering Co., 178 Atlantic Ave., Boston 10, Mass.

Davey Tree Expert Co., 117 South Water St., Kent, Ohio
 Davison Chemical Co., Div. of W. R. Grace & Co., 101 North Charles St., Baltimore 3, Md
 Doggett-Pfeil Co., 681 Morris Turnpike, Springfield, N. J.
 Doughton Seed Co., 253 Brunswick St., Jersey City 2, N. J.
 E. I. du Pont de Nemours & Co., Wilmington, Del.

Eastern States Farmers' Exchange, Inc., 26 Central St., West Springfield, Mass.
 Essex County Cooperative Farming Association, 144 South Main St., Topsfield, Mass.
 Excell Laboratories, Inc., 2732 Indiana Ave., Chicago, Ill.

Faesly & Besthoff, Inc., 25 East 26th St., New York 10, N. Y.
 Farm Bureau Association, 155 Lexington St., Waltham 54, Mass.
 Fiestar, Inc., 655 Fifth Ave., New York 22, N. Y.
 Forward House Div., Olin Mathieson Chemical Corp., P. O. Box 991, Little Rock, Ark.
 Frank's Market Garden, 1398 Allen St., Springfield, Mass.
 Frost & Higgins Co., 20 Mill St., Arlington 74, Mass.

Garfield Williamson, Inc., 1072 Westside Ave., Jersey City 6, N. J.
 Garfield Williamson, Inc., Town & Country Products Div., 157 Corbin Ave., Jersey City, N. J.
 Glorion Div., Aluminum and Chemical Corp., 22 West Putnam Ave., Greenwich, Conn.
 Goulard & Olen, Inc., Skillman, N. J.
 Grace Chemical Co., Div. of W. R. Grace & Co., 501 Edway Bldg. Memphis 3, Tenn.
 Grant Co., 2735 North Ashland Ave., Chicago 14, Ill.
 Thomas J. Gray Co., Div. of Littlefield-Wyman Nurseries, Inc., 227 Centre Ave., Abington, Mass.

Heller Greenhouse Laboratories, 218 East Pikes Peak Ave., Colorado Springs, Col.
A. H. Hoffman, Inc., Landisville, Penn.
Hubbard-Hall Chemical Co., 28 Benedict St., Waterbury, Conn.
Humphreys-Godwin Co., 2246 Park Ave., Memphis, Tenn.
Hydroponic Chemical Co., Inc., Copley, Ohio
Hy-Trous Corp., 16 Fowle St., Woburn, Mass.

Independence Hall Seed Co., 2700 Wilmarco Ave., Baltimore 23, Md.
International Minerals & Chemical Corp., Woburn, Mass.
International Minerals & Chemical Corp., Phosphate Chemicals Div., 20 North Wacker Drive,
Chicago 6, Ill.

Kapco Div., Summers Fertilizer Co., Inc., McKeesport, Penn.
Spencer Kellogg & Sons, Inc., 98 Delaware Ave., Buffalo 2, N. Y.

Lawn-Tex, Inc., 1640 West Fulton St., Chicago, Ill.
Lebanon Chemical Corp., Lebanon, Penn.
Lee Patten Seed Co., 360 Ninth St., Jersey City 2, N. J.
Leeds Chemical Products, Inc., 112 East Walton St., Chicago, Ill.
Lexington Garden, Inc., 92 Hancock St., Lexington, Mass.
O. E. Linck Co., Inc., Clifton, N. J.
Loanium Company of America, 8 Kingsland Ave., Harrison, N. J.
Lockwood Nutrition Service, Inc., 177 Milk St., Boston, Mass.
Loncala Phosphate Co., High Springs, Florida
L. B. Lovitt & Co., 314 Cotton Exchange Bldg., Memphis, Tenn.
John D. Lyon, Inc., 143 Alewife Brook Pkway., Cambridge 40, Mass.

McKesson & Robbins, Inc., 79 Milk St., Boston 9, Mass.
Mamlon Co., 1089 Whalley Ave., New Haven 15, Conn.
Monsanto Chemical Co., 1700 South Second St., St. Louis 4, Mo.

Natural Plant Food Co., 210 West California St., Oklahoma City 2, Okla.
Nitro-Form Agricultural Chemicals Div., Woonsocket Color & Chemical Co., Inc.,
92 Sunnyside Ave., Woonsocket, R. I.
Nitrogen Dov., Allied Chemical & Dye Corp., Hopewell, Va.

Old Fox Agricultural Sales, Inc., 49 Valley St., East Providence, R. I.
Olds & Whipple, Inc., 168 State St., Hartford, Conn.

Parks-Barnes, Inc., 530 Sixth St., Hermosa Beach, Cal.
Pedigreed Seed Co., 96 Forrest St., Jersey City 5, N. J.
Penn Co., 46 Blue Hill Ave., Milton, Mass.
Plant Magic Products, Inc., 40 Highland Ave., Seekonk, Mass.
Plant Products Corp., Kennedy Ave., Blue Points, L. I., N. Y.
Plantabbs Corp., 1105 Maryland Ave., Baltimore 1, Md.
Proen Products Co., 9th & Grayson Sts., Berkeley 10, Cal.

Ra-Pid-Gro Corp., 88 Ossian St., Dansville, N. Y.
John Reardon & Sons, Div. of Wilson & Co., Inc., 51 Waverly St., Cambridge 39, Mass.
Ree-Lee Good Products Div., C & C Super Corp., Route 4 & Nordhoff Place, Englewood, N. J.
Rose Manufacturing Co., 160 Main St., Beacon, N. Y.
Ruhm Phosphate & Chemical Co., Columbia, Tenn.

O. M. Scott & Sons Co., Maryville, Ohio
Sears, Roebuck & Co., 925 South Homan Ave., Chicago 7, Ill.
Sewerage Commission of the City of Milwaukee, Milwaukee 1, Wis.
Soil Saver Service, Pawlet, Vt.
Stanton Co., Holland, Mich.
Stern's Garden Products, Inc., 404 William St., Geneva, N. Y.
Stim-U-Plant Laboratories, Inc., 2077 Parkwood Ave., Columbus 19, Ohio
Sudbury Laboratory, Dutton Road, South Sudbury, Mass.
Swift & Co., Plant Food Div., Hartford 1, Conn.
Swiss Farms, Inc., Philmont, N. Y.

Taft Oil Co., Inc., 111 Lyman St., Holyoke, Mass.
 Tennessee Corp., 617-27 Grant Bldg., Atlanta, Ga.
 L. Teweles Seed Co., 222 South Third St., Milwaukee 1, Wis.
 Thomson Nursery, Danvers, Mass.
 Triple A Mills, Townsend Harbor, Mass.
 United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Penn.
 Universal Chemical Co., 52 Oakville St., West Lynn, Mass.
 Valley Feed & Supply Co., Inc., Union Road, Spring Valley, N. Y.
 Walker-Gordon Laboratory Co., Plainsboro, N. J.
 Winslow Nurseries, Inc., Needham, Mass.
 F. H. Woodruff & Sons, Inc., Milford, Conn.

**DIRECTORY OF MANUFACTURERS WHO REGISTERED
 AGRICULTURAL LIME PRODUCTS FOR SALE
 IN MASSACHUSETTS IN 1957**

Adams Hydrate Co., Inc., 177 Milk St., Boston, Mass.
 Conklin Limestone Co., Inc., Canaan, Conn.
 Conklin Limestone Co., Inc., R.F.D., Saylesville, R. I.
 Crawford's Wholesale Garden Supplies, 156 Valley St., Providence, R. I.
 Thomas J. Grey Co., Div. of Littlefield-Wyman Nurseries, Inc., 227 Centre Ave., Abington, Mass.
 A. H. Hoffman, Inc. Landisville, Penn.
 Lee Lime Corp., Marble St., Lee, Mass.
 Limestone Products Corp., of America, 122 Main St., Newton, N. J.
 New England Lime Co., Adams, Mass.
 O. M. Scott & Sons Co., Marysville, Ohio
 Swiss Farms, Inc., Philmont, N. Y.
 United States Gypsum Co., 300 West Adams St., Chicago 6, Ill.

Seed Inspection

BY

Seed Control Service Staff

Massachusetts Agricultural Experiment Station

June 3, 1958



This report, the thirtieth in seed control service, is a record of work delegated to the Massachusetts Agricultural Experiment Station during 1957 by authority of Chapter 94 as amended by Chapter 377 of the Acts of 1946.

LABORATORY REGULATIONS AND FEES FOR TESTING SEED

The following regulations and fees have been approved by the Director of the Massachusetts Agricultural Experiment Station.

FIELD CROPS:	KIND OF SEED	PURITY	GERMINATION	PURITY AND
		ONLY	ONLY	GERMINATION
Alfalfa, Rape, Ryegrasses, Soybeans, Timothy		\$1.00	\$0.50	\$1.25
Cereals, Buckwheat, Sudan Grass, Vetches.....		1.25	.50	1.50
Clovers, Fescues, Reed Canary Grass.....		1.00	.50	1.50
Brome Grass, Millets.....		1.50	.50	2.00
Bentgrasses, Bluegrasses, Orchard Grass, Redtop....		2.00	.50	2.25
Redtop (Unhulled).....		2.50	.50	2.75

Mixtures: Lawn, Pasture, Mowing, etc.

Purity only.....\$2.50

Germination only..... .50 for each component

Purity and Germination..... 2.50 + .50 for each component

Special Mixtures: Consisting of two kinds of cereals, two kinds of clover only, or Timothy and one kind of clover

Purity only..... \$1.25

Germination only..... .50 for each component

Purity and Germination..... 2.00

Vegetables: Germination tests for all kinds of vegetable seeds, 30 cents each.

Cleaning Tobacco Seed: For each lot of one pound or less, based on the weight of seed as received for cleaning, 50 cents.

Kinds of Seed Not Listed: Fees for testing and for other seed determinations not listed will be based on the time consumed in making the test or for other service requested.

Free Tests: During any one calendar year, the Seed Testing Laboratory will allow two free tests of vegetable or tobacco seed to any person residing or doing business in the Commonwealth.

The minimum weights of samples to be submitted for analysis are:

- Two ounces of grass seed, white or alsike clover, or seeds not larger than these.
- Five ounces of red or crimson clover, alfalfa, ryegrasses, millet, rape, or seeds of similar size.
- One pound of cereal, vetches, or seeds of similar or larger size.

The minimum number of seeds of any kind to be submitted for a germination test is 400.

Samples should be taken so as to represent correctly the lot sampled, each placed in a strong container, the parcel of samples securely wrapped and addressed to Seed Laboratory, Agricultural Experiment Station, Amherst, Mass.

Checks or Money Orders must be made payable to the University of Massachusetts and sent to the Treasurer's Office.

In no case will the final report for work done be rendered until all fees are paid.

Massachusetts Vegetable Seed Standards

The amended seed law requires in Section 261 I that the Director of the Massachusetts Agricultural Experiment Station shall, after reasonable notice and hearing and with the approval of the Commissioner of Agriculture, adopt vegetable seed germination standards, prescribe rules and regulations, and in like manner modify or amend rules and regulations governing the methods of sampling, inspecting, analyzing, testing, and examining agricultural, vegetable and flower seeds and the tolerances to be followed in administration.

A hearing for the above stated purpose was held in Horticultural Hall, Worcester, Massachusetts, at 3 P. M., October 18, 1946. The following set of standards was so approved and adopted:

KIND OF SEED	GERMINATION STANDARD %	KIND OF SEED	GERMINATION STANDARD %
Artichoke (<i>Cynara Scolymus</i>)....	60	Kale.....	75
Asparagus.....	70*	Kohlrabi.....	75
Bean, Lima.....	70	Leek.....	60
Bean, Scarlet Runner.....	75	Lettuce.....	80
Bean, Other Varieties.....	75	Muskmelon.....	75
Beet.....	65	Mustard.....	75
Broccoli.....	75	Okra.....	50*
Brussels Sprouts.....	70	Onion.....	70
Cabbage.....	75	Parsley.....	60
Cabbage, Chinese.....	75	Parsnip.....	60
Carrot.....	55	Peas.....	80
Cauliflower.....	75	Pepper.....	55
Celeriac.....	55	Pumpkin.....	75
Celery.....	55	Radish.....	75
Chard, Swiss.....	65	Rhubarb.....	60
Chicory.....	65	Rutabaga.....	75
Citron.....	65	Salsify.....	75
Collard.....	80	Sorrel.....	60
Corn, Sweet.....	75	Soybean.....	75
Cress, Garden or Curled.....	40	Spinach, Common.....	60
Cress, Water.....	35	Spinach, New Zealand.....	40
Cucumber.....	80	Squash.....	75
Dandelion.....	45	Tomato.....	75
Egg Plant.....	60	Tomato, Husk.....	50
Endive.....	70	Turnip.....	80
Fetticus (Corn Salad).....	70	Watermelon.....	70

*Including Hard Seeds. However, the percentage of germination, exclusive of hard seeds and the percentage of hard seed, if present, must be stated

SEED TESTING FOR THE SEASON OF 1957

By Seed Control Service Staff

Wendell P. Diltner, *Assistant Research Professor*
In Charge of Seed Laboratory

Jessie Anderson, *Assistant Research Professor*
Waldo C. Lincoln, Jr., *Research Instructor*
A. W. Clapp, *State Inspector*¹
Paul W. Brown, *State Inspector*¹

Frank B. Allen, *State Inspector*¹
Paul Korpita, *Laboratory Assistant*
Kenneth Pulton, *Laboratory Assistant*
May J. Honnay, *Senior Clerk*

From November 1, 1956, to November 1, 1957, the Seed Laboratory received 4944 samples of seed, of which 1315 were collected by the State Department of Agriculture and 3629 were sent in by seedsmen, farmers, and various State institutions.

Classification of the samples for which tests were completed, with the total number of laboratory tests involved, is listed in the following summary:

NUMBER OF SAMPLES	NUMBER OF TESTS	
	PURITY	GERMINATION
351 Field Crops for Purity and Germination	351	351
513 Field Crops for Germination .....	.....	513
2 Field Crops for Purity	2	.....
99 Lawn Mixtures and Other Types of Mixtures, for Purity; Germinations involving 445 ingredients	99	445
86 Lawn Mixtures for Germination; Germinations in- volving 488 ingredients	.....	488
22 Lawn Mixtures for Purity	22	.....
3237 Vegetable Samples .....	.....	3237
24 Tree Seed Samples .....	.....	24
141 Tobacco Seed Samples .....	.....	141
469 Flower Seed Samples .....	.....	469
4944	174	5668

Field tests to determine trueness to type consisted of 174 samples of vegetable seed and 376 samples of flower seeds, respectively.

The Seed Laboratory cleaned 90 lots of tobacco seed samples for Connecticut Valley farmers. The gross weight of the tobacco seed samples was 57.04 pounds, and the net weight for the cleaned seed was 44.86 pounds.

¹Employed by the State Department of Agriculture.

Explanation of Tables

Tables 1 through 5 consist of data in conformity with requirements of the Seed Law defined by Chapter 94 as amended by Chapter 377 of the Acts of 1946:

- Table 1. Results of Inspection and Analyses of Field Seeds as defined under Sections 261 B1 and 261 C.
- Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds as defined under Sections 261 B1 and 261 C.
- Table 3. Results of Inspection and Germination of Vegetable Seeds as defined under Sections 261 B2 and 261 C.
- Table 4. Field Tests of Vegetable Seeds, Type and Variety Studies, as defined under Sections 261 H.
- Table 5. Studies of Flower Seeds, Laboratory and Field Tests to Determine Quality, as defined under Sections 261 H.
- Table 6. Summary, by Wholesalers, of the Performance of Flower Seeds in the Field.
- Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory. This table lists the number of samples correctly labeled or mislabeled.

All samples were taken by inspectors from the State Department of Agriculture and were tested at the Seed Laboratory according to the Rules for Seed Testing adopted by the Association of Official Seed Analysts.

Within each table the wholesalers are listed in alphabetical order, and the various kinds of seeds sold by them follow the same alphabetical arrangement. Mislabeling and other irregularities are emphasized by boldface type and explained in the final column of the table. The number preceding each analysis is for identification and reference. The line to the right of the letter "L" gives information copied from the label; that to the right of "F," what was found in the laboratory analysis.

Results of Inspection and Analyses of Field Seeds—Sections 261 B1 and 261 C.

Each lot of Agricultural Seeds must be labeled to show the commonly accepted name and variety: except that for Barley, Buckwheat, Oats, Rye, and Wheat, when the variety is unknown, the label shall bear the statement: "Variety Unknown." The label must also show a lot number or other identification; percentage, by weight, of pure seed; percentage, by weight, of inert matter; percentage, by weight, of weed seeds; percentage, by weight, of other agricultural seeds; percentage of (a) germination, exclusive of hard seeds; (b) hard seeds, if present; month and year germination test was completed; origin of Alfalfa, Red Clover, and Field Corn (other than Hybrid)—if origin is unknown, it must be so stated; name and address of the person who labeled the seed, or who sells, offers, or exposes such seed for sale; and the names of secondary noxious weed seeds and number per ounce when present singly or collectively in excess of 1 in 5 grams and 1 in 10 grams of the smaller seeds, and per pound when present in excess of 1 in 25 grams and 1 in 100 grams of the larger seeds. Secondary noxious weeds are dodder (*Cuscuta* spp.), horse nettle (*Solanum carolinense*), wild mustards (*Brassica* spp.), wild garlic and wild onion (*Allium* spp.), perennial sow thistle (*Sonchus arvensis*), corncockle (*Agrostemma githago*), buckhorn plantain (*Plantago lanceolata*), and wild radish (*Raphanus raphanistrum*). Seed is prohibited from sale for having a false or misleading label; unless the test for germination has been completed within a nine-month period or if it contains primary noxious weed seeds in excess of tolerance. Primary noxious weeds are Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), and quack grass (*Agropyron repens*).

Two hundred ninety-two samples of field crop seeds were analyzed in the laboratory. Results of analysis, however, are given only for samples that were mislabeled. In Table 1, complete analysis is recorded; but mislabeling, indicated by boldface type, is applied only to the items named above. Wholesaler's name is in boldface type.

Table 1

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, and Place Collected.	Variety of Seed, Lot Number, Origin	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
B-229	Timothy	Belt Seed Company, Baltimore, Md. Bekdettown State School, Bekdettown	Timothy, No. 518	99.78 99.74	0.04 0.18	0.12 0.08	0.06 0.00	90.00 84.05	2 1957 5 1957	Noxious weeds not declared, but 9 Buckhorn plantain per ounce found.
B-251	Soybean	W. E. Fernald State School, Templeton Colony	Wilson, No. 2896	98.00 94.88	0.25 0.01	1.75 4.26	0.00 0.85	85.00 93.00	1 1957 5 1957	Inert matter exceeds that stated, other crop seeds not stated but .85% found.

Table 1. Results of Inspection and Analyses of Field Seeds—Continued.

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distribution, and Place Collected. Variety of Seed, Lot Number, Origin	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
BellSeed Company, Baltimore, Md.—Continued									
C-403	Timothy	Westboro State Hospital, Westboro No. 518	L. 99.78	0.04	0.12	0.06	90.00	2-1957	Noxious weeds not declared but 10 Buckhorn plants per ounce found.
			F. 99.77	0.12	0.11	0.00	84.00	5-1957	
C-405	Fescue	Worcester State Hospital, Worcester Cheeping Red, No. 2873.	L. 98.00	0.10	1.12	0.75	90.00	2-1957	Inert matter exceeds that stated.
			F. 94.28	0.09	4.41	1.22	90.00	6-1957	
Better Turf Seed Co., Jersey City, N. J.									
C-683	Fescue	F. Diehl & Son, Inc., Wellesley (Chewings, Lot No. 6)	L. 98.20	0.15	0.20	1.45	90.00	2-1957	Required information not given.
			F. 97.93	0.25	1.78	0.04	90.00	7-1957	
C-684	Fescue	Fine Leaved ² , Lot No. 82	L. 99.67	0.19	0.14	0.00	93.00	2-1957	Not a variety. Required information not given.
			F. 99.44	0.08	0.37	0.11	96.00	7-1957	
Comstock, Ferrie & Co., Wethersfield, Conn.									
B-251	Rye	Foster-Farrar Co., Northampton Domestic, No. 3061	L. 99.71	0.18	0.41	0.00	89.00	2-1957	Given formula totals more than 100%.
			F. 99.56	0.14	0.23	0.07	97.00	4-1957	
Arthur R. Cone, Inc., Buffalo, N. Y.									
B-247	Buckwheat	Wayne Feed Supply Co., Greenfield Mixed, No. 58 x 247.	L. 98.20	0.00	0.10	1.70	87.00	12-1956	Weed seeds not stated but 1.80% found.
			F. 98.12	1.80	0.08	0.00	95.00	5-1957	
C-404	Bentgrass	Westboro State Hospital, Westboro Colonial, No. 40-85	L. 98.06	0.21	1.70	0.03	85.00	1-1957	Colonial Bentgrass declared but Highland Bentgrass found.
			F. 99.18	0.21	0.61	0.00	95.00	5-1957	

Table 1. Results of Inspection and Analyses of Field Seeds—Concluded

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, and Place Collected. Variety of Seed, Lot Number, Origin	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Violations
Philadelphia Seed Co., Philadelphia, Pa.									
C-437	Fescue	Thomas F. Culkeen Warehouse, Charlestown Cheswings, No. M-510	L 98.45 F 98.23	0.30 0.86	0.75 0.71	0.50 0.20	85.00 72.00	3/1957 7/1957	Germination below that stated.
		Clewings, No. M-516	L 98.40 F 98.86	0.20 0.11	0.60 0.83	0.80 0.20	85.00 67.00	4/1957 8/1957	Germination below that stated.
C-616	Bluegrass	D. Harbeck & Son, New Bedford Kentucky, No. G-64	L 86.00 F 86.10	0.32 0.40	13.58 3.50	0.10 0.00	75.00 77.00	4/1957 7/1957	Noxious weeds not declared but 9 Buckhorn plantain per ounce found
B-204	Oats	Wm. G. Scarlett & Co., Baltimore, Md. Frank Howard Inc., Pittsfield Cert. Clinton, No. 5115	L 99.63 F 99.89	0.00 0.00	0.07 0.04	0.26 0.07	97.00 94.00	3/1957 5/1957	Given formula totals less than 100%
C-533	Clover	Stanford Seed Co., Buffalo, N. Y. City Grain Co., Marlboro Medium Red, No. 6594 (Origin—Illinois)	L 99.75 F 99.60	0.06 0.12	0.02 0.19	0.17 0.09	85.5 89.3	1/1957 6/1957	Noxious weeds not declared but 11 Buckhorn plantain per ounce found.
B-234	Clover	The Stanford Seed Co., Buffalo, N. Y. J. L. Dannel & Son, Bernardston Medium Red, No. 6594 (Origin—Illinois)	L 99.75 F 99.65	0.06 0.09	0.02 0.15	0.17 0.11	85.5 92.2	1/1957 6/1957	Noxious weeds not declared but 6 Buckhorn plantain per ounce found.
C-500	Timothy	New Bedford Grain Co., New Bedford No. 3111	L 99.75 F 99.57	0.11 0.09	0.11 0.30	0.03 0.04	90.00 84.00	2/1957 5/1957	Noxious weeds not declared but 10 Buckhorn plantain per ounce found
C-461	Bentgrass	Vaughan's Seed Co., New York City, N. Y. Paulini Bros., Co. Newton Center South German, No. 14-22	L 90.60 F 83.87	0.51 0.48	8.39 15.51	0.50 0.14	83.00 87.00	1/1957 5/1957	Inert matter exceeds that stated.

C-471	Clover	Whitney Seed Co., Buffalo, N. Y.									
		Conlon & Donnelly Co., Attleboro B. T. Pennscott Red, No. 50677 (Origin *)									
B-240	Millet	J. L. Dunnell & Son, Leominster Hungarian, No. 48550									
B-238	Redtop	No. 40585									
C-425	Bentgrass	Essex County Cooperative Farming Assoc., Topsfield Colonial, No. 3504									
C-423	Poa trivialis	No. 3203									
B-94	Alfalfa	Haley's Grain Store, Palmer B. T. Cert. Dupuit, No. 2181 (Origin *)									
B-161	Clover	Whitney Seed Co., Buffalo, N. Y. A. J. Lane Co., Springfield White, No. 56426									
C-455	Bromegrass	Mackenzie & Winslow, Inc., Fall River Canada No. 1, No. 3829									
B-41	Clover	Whitney Seed Co., East Deerfield B. T. Pennscott Red, No. 50677 (Origin*)									
B-294	Fescue	Meadow, No. 2593									
B-38	Vetch	Winter Hairy, No. 6769									

Noxious weeds not elevated for 36
Corncockle per pound found.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Brand Name, Lot Number and Components	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks	
		Label	Found	Label	Found							
C-495A	Belt Seed Co., Baltimore, Md.—Continued											
	Mass. Dept. of Public Works, Middleboro											
	Slope Mixture, Lot No. 8936.											
	Components:											
	Chewings Fescue 24.25 85.00											
	Alta Fescue 29.10 85.00											
	Domestic Ryegrass 19.60 97.00											
	Redtop 13.80 93.00											
	White Clover 9.80 91.4											
	Festuca spp. 20.52 85.00											
(Commercial Creeping Red fescue, some Chewings)												
C-495B	Mass. Dept. of Public Works, Northboro											
	Plot Mixture, Lot No. 8935											
	Components:											
	Red Fescue 49.80 70.00											
	Redtop 18.40 94.00											
	Ky. Bluegrass 17.00 77.00											
	Festuca spp. 42.96 79.00											
	(Commercial Red Fescue)											
	Timothy 5.35 70.00											
	Slope Mixture, Lot No. 8936											
C-495B	Components:											
	Chewings Fescue 24.25 85.00											
	Alta Fescue 29.10 85.00											
	Domestic Ryegrass 19.60 95.00											
	Redtop 13.80 90.00											
	White Clover 9.80 87.7											
	Festuca spp. 25.42 88.00											
	(Commercial Red fescue, some Chewings)											
	Components not listed in order of predominance.											
	Declared but commercial Red fescue and some Chewings found.											
Germination below that stated.												
C-496B	Mass. Dept. of Public Works, Northboro											
	Plot Mixture, Lot No. 8935											
	Components:											
	Red Fescue 49.80 70.00											
	Redtop 18.40 94.00											
	Ky. Bluegrass 17.00 77.00											
	Festuca spp. 42.96 79.00											
	(Commercial Red Fescue)											
	Timothy 5.35 70.00											
	Slope Mixture, Lot No. 8936											
C-495B	Components:											
	Chewings Fescue 24.25 85.00											
	Alta Fescue 29.10 85.00											
	Domestic Ryegrass 19.60 95.00											
	Redtop 13.80 90.00											
	White Clover 9.80 87.7											
	Festuca spp. 25.42 88.00											
	(Commercial Red fescue, some Chewings)											
	Components not listed in order of predominance.											
	Declared but commercial Red fescue and some Chewings found.											

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Brand Name Lot Number and Components	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
C-690	Better Turf Seed Co., Jersey City, N. J. F. Diehl & Son, Inc., Wellesley Diehl's Best Turf Mixture, Lot No. 77										
	Components:										
	Ky. Bluegrass	25.50	26.07	85.00	88.00						
	Chewings Fescue	19.80		90.00				4.45	0.60	11 1956	
	Illaloe Fescue	19.80						5.68	0.21	6 1957	
	Colonial Bent	14.70		90.00							
	Trivialis Bluegrass	9.00	8.27	85.00	88.00						
	Monion Ky. Bluegrass	5.90	5.61	80.00	78.00						
	Festuca spp.		39.94		92.00						
	(Chewings & Illaloe fescue										
	Agrostis tenuis var. Highlandia		14.01		96.00						
	Colonial bent not sufficient, Highland colonial bentgrass found.										
C-573	Bonnie Green Products Co., Philadelphia, Pa. Star Market Warehouse, Watertown Bonnie Green All Purpose Mixture, Lot No. 500-165										
	Components:										
	Domestic Ryegrass	46.50	48.56	88.00	90.00						
	Ky. 31 Tall Fescue	24.50	26.82	85.00	77.00						
	Perennial Ryegrass	23.50	22.40	88.00	90.00						
	Ky. Bluegrass	1.00	0.30	75.00	75.00						
	White Clover	1.00	0.66	70-15	77-14						
	Colonial Bent	0.50	0.53	82.00	80.00						
	Colonial bent not sufficient, Highland colonial bentgrass found.										
B-179	Woodlawn Supply Co., So. Hadley Bonnie Green Grass Seed Mixture, Lot No. 500-165										
	Components:										
	Domestic Com. Ryegrass	46.50	42.86	88.00	92.00						
	Ky. 31 Tall Fescue	24.50	24.25	85.00	88.00						
	Perennial Ryegrass	23.50	28.11	88.00	92.00						
	Ky. Bluegrass	1.00	1.23	75.00	83.00						
	White Clover	1.00	1.49	70-15	76-17						
	Colonial Bentgrass	0.50		82.00	76-17						
	Agrostis spp. (Highland colonial bentgrass)		83		3.06						
	Colonial bent not sufficient, Highland colonial bentgrass found.										

Arthur R. Cone, Inc., Buffalo, N. Y.
M. D. C. Water Dist. Section, Medfield
Parker Cert. Mix. Lot No. 38 & 407

(7-21)

Components:			
Illabea Fescue	44.19	43.95	94.00
Redtop	27.90		90.00
Bentgrass	24.58		90.00
Agrostis spp. (Redtop & Highland Bentgrass)		53.01	94.00

Skibiski Farm Supply Co., So. Deerfield
Special Mixture P-10 Lawnseed, Lot No. 35 x 42

B-125

Component:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							</
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Cover Lawn Seed Co., Baltimore, Md.

Boston Supply Co., Boston

ELK 57 Mixture, Lot No. ELK 57.....

C-311

	Percentage less than that stated.	Percentage exceeds that stated.
Components:	-	-
Italian Ryegrass.....	65.41	98.00
Penninnal Ryegrass.....	78.40	98.00
Alta Tail Fescue.....	28.14	-
	11.56	-
	4.53	86.00
	4.58	70.00

Krevalin Hardware Co., Springfield

Grass Seed Mixture, Lot No 46.

15-15X

Grass Seed Mixture, Lot No. 46	1	96.80	0.50	2.70	0.00	2 1957	Other seed exceeds that stated
	1	98.17	0.79	0.58	0.46	4 1957	

Components:

Italian Renaissance

Perennial Ryegrass.....

Ky. 31 Fesche.

Chewings Rescue

THE UNIVERSITY OF CHICAGO

Timothy.....

Festuca spp.

(Chewings & Creeping) Rejection

C-398	M. D. C., Revere Beach Special Mixture, Lot No. 140	...	L	99.31	0.14	0.94	0.31	3 1957 5 1957	Given formula totals more than 100%. Inert matter exceeds that stated.
	Components: Illahee Fescue	44.61	F	97.35	0.10	2.45	0.10		
	Domestic Ryegrass	26.38							Declared but a mixture of Illahee and commercial Red fescue found.
	Colonial Bentgrass	14.94							Colonial bentgrass not sufficient.
	Ky. Bluegrass	12.72							Highland colonial bentgrass found.
	Festuca spp. (Illahee & Commercial Red fescue)	14.88							
	Agrostis tenuis var. Highlandia	42.15							
		16.10							
	Mission Hall Project, Boston Housing Authority, Roxbury								
C-572	Special Mixture, Lot No. 1FC 7000	...	L	94.61	0.50	4.89	0.00	4 1957 5 1957	Germination below that stated.
	Components: Chewings Fescue	27.44	F	96.81	0.28	2.80	0.11		
	Domestic Ryegrass	26.73							
	Ky. Bluegrass	20.64							
	Highland Bent	9.80							
	Poa trivialis	9.00							
	White Clover	1.00							
		25.40							
		27.59							
		20.54							
		10.86							
		11.19							
		78.00							
		61.37							
		35.00							
		99.00							
		78.00							
		71.00							
		95.00							
		85.00							
		75-20							
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		90.00							
		86.4							
		80.13							
		86.00							
		39.84							
		19.87							
		39							

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesale Distributor Place Collected, Brand Name, Lot Number and Components	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
Eastern States Farmers' Exchange, West Springfield Mass.—Continued											
B-137	Eastern States Farmers' Exchange, Northampton—Continued	Components not listed in order of predominance									
	Soil Conservation Mixture, Lot No. 1279					L 94.60 F 94.28	0.20 0.37	4.58 4.45	0.62 0.90	1, 1957 4, 1957	
	Components:										
	Ky. Bluegrass	17.75	19.88	84.00	77.00						
	Redtop	38.00	37.01	90.00	93.00						
	White Clover	4.95	6.26	75-15	86-14						
Flower Lane Farm, Martinsville, N. J.											
C-595	First National Stores, Inc., Somerville										
	Glenside Park Choice Mixed, Lot S-57.4					L 96.74 F 99.21	0.36 0.25	2.90 0.44	0.00 0.10	2, 1957 5, 1957	
	Components:										
	Perennial Ryegrass	28.60	35.07	90.00	94.00						
	Domestic Ryegrass	25.46	19.58	91.00	94.00						
	Creeping Red Fescue	14.60	14.87	72.00	77.00						
Garfield Williamson, Inc., Jersey City, N. J.											
C-517	Richard's Hardware Co., Brooklyn										
	Green Circle Mixture, Lot No. 261-1					L 94.54 F 98.43	0.45 0.04	4.51 1.21	0.50 0.32	2, 1957 5, 1957	
	Components:										
	Meadow Fescue	28.50	25.42	85.00	92.00						
	Ky. 31 Tall Fescue	28.50	30.61	85.00	70.00						
	Perennial Ryegrass	28.50	33.61	90.00	95.00						
Germination below that stated.											
Highland Bent											
Poa trivialis											
Ky. Bluegrass											
Merion Ky. Bluegrass											
Germination below that stated.											

C-294 **Averdon Distributors, Inc., Boston**
White, Small Hop Clover Mixture, Lot No. HED 7

Components:		L		F		1		97.00		0.50		1.90		0.60		2, 1957		4, 1957	
White Clover		60-20		43.74		84-4		43.74		55.08		0.61		0.57		4		-	
*Small Hop Clover		60-20		-		88-0		-		-		-		-		-		-	

Percentage loss, three that not good
Small Hop Clover showed no loss

C-313 **Rosen Supply Co., Boston**
Independence Hall Quick Sprout Mixture, Lot No. C-5

Components:		L		F		93.14		0.55		4.91		1.40		2, 1957		4, 1957		-
Italian Ryegrass		80.00		40.54		98.00		-		-		-		-		-		-
Timothy		80.00		24.02		86.00		-		-		-		-		-		-
Perennial Ryegrass		80.00		20.72		98.00		-		-		-		-		-		-
Alta Tall Fescue		80.00		14.43		95.00		-		-		-		-		-		-
White Clover		60-20		0.50		----		-		-		-		-		-		-
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Order crop seeds less than stated.

Percentage exceeds that stated.

Delayed but none found.

C-536 **D. Landreth Seed Co., Philadelphia, Pa.**
City Grain Co., Marlboro
Never Die Mixture, Lot No. 595

Components:		L		F		86.99		0.24		4.43		6, 1957	
Ky. Bluegrass.....	21.45	23.36	82.00	76.00	-	-	-	-	-	-	-	-	
Chewings Fescue.....	21.29	17.86	90.00	86.00	-	-	-	-	-	-	-	-	
Perennial Ryegrass.....	20.28	16.39	90.00	95.00	-	-	-	-	-	-	-	-	
Redtop.....	11.04		90.00		-	-	-	-	-	-	-	-	
Poa trivialis.....	4.50	7.96	85.00	32.00	-	-	-	-	-	-	-	-	
Highland Bent.....	4.23		85.00		-	-	-	-	-	-	-	-	
White Dutch Clover.....	4.70	5.27	75-21	76-20	-	-	-	-	-	-	-	-	
Agrostis spp.....		17.74		94.00	-	-	-	-	-	-	-	-	
(Redtop & Highland bentgrass)					-	-	-	-	-	-	-	-	

Germination below that stated.

C-594 **Lawn Products Co., Philadelphia, Pa.**
First National Stores, Somerville
Glen Green Grass Seed Mix, All Perennial Mix, Lot No. *

Components:		L		F		92.00		0.35		7.50		0.15		2 1957		5 1957		- <th data-kind="ghost"></th>		
Ky. Bluegrass		78.00		33.59		87.00		-		-		-		-		-		-		
Chewings Red Fescue		88.00		24.25		-		-		-		-		-		-		-		
Creeping Red Fescue		85.00		24.00		-		-		-		-		-		-		-		
*Colonial Bentgrass		85.00		9.75		-		-		-		-		-		-		-		
Redtop		90.00		7.32		-		-		-		-		-		-		-		
(Creeping Red & Chewings fescue)		-		45.56		76.00		-		-		-		-		-		-		

*Required information not given.
Other crop seed exceeds that stated.

*Declared but Redtop found.

Germination below that stated.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261 C—Continued.

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Brand Name, Lot Number and Components	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
C-615	Lee Patten Seed Co., Arlington, Mass.										
	Jerry's Paint & Hardware Co., New Bedford										
	Fast Grow Mixed Grass Seed, Lot No. FG 57										
	Components:										
	Common Ryegrass	46.04	33.49	90.00	94.00						
	Ky. 31 Tall Fescue	17.64	15.13	75.00	79.00						
	Perennial Ryegrass	16.66	23.11	90.00	94.00						
	Timothy	11.82	15.84	70.00	77.00						
	Redtop	2.04	2.74	75.00	85.00						
	Ky. Bluegrass	1.02	0.38	70.00							
	White Clover	1.00	2.82	70.20	77.15						
C-401	State Airport Management Board, Bedford										
	Bedford Airport Mixture Lot No. 14257										
	Components:										
	Creeping Red Fescue	29.50	29.84	85.00	96.00						
	Alfa Fescue	27.05	28.71	85.00	84.00						
	Colonial Bentgrass	18.82	14.90	85.00	92.00						
	Common Ryegrass	15.58	17.06	90.00	98.00						
						L 90.95	0.26	8.32	0.47	2/1957	
						F 90.51	0.21	8.61	0.67	4/1957	
											Colonial bentgrass not sufficient, Highland colonial bentgrass found.
	C-2	John D. Lyon, Inc., Cambridge, Mass.									
Mass. Dept. of Public Works, Maynard											
MDPW Slope Mixture, Lot No. 13030B											
Components:											
Alfa Fescue		29.10	22.95	85.00	88.00						
Chewings Creeping Red Fescue		24.25		85.00							
Domestic Ryegrass		19.60	17.27	90.00	97.00						
Redtop		13.80	19.25	90.00	93.00						
Alsike Clover		9.80	10.82	90.00*	64-30						
Festuca spp. (Creeping Red & Chewings)			26.87		94.00						
						L 96.55	0.33	2.64	0.48	6/1956	
					F 97.16	0.32	1.58	0.94	10/1956		
										Percentage less than that stated. Percentage of Chewings and Creeping Red fescue must be stated separately. Percentage exceeds that stated. *Hard seed must be stated separately	

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Brand Name Lot Number and Components	Components		Germination		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks	
		Label	Found	Label	Found							
C-12	Wm. G. Scarlett & Co., Baltimore, Md. M. D. C., Revere Beach Special Grass Seed Mixture, Lot No. 11614	Components:										
		Illahoe Cr. Red Fescue		44.35		95.00						Declared but a mixture of Illahoe and Creeping Red fescue found.
		Domestic Ryegrass...		24.75	23.36	90.00	98.30	0.25	1.40	0.05	7, 1956	
		Highland Bentgrass...		14.80	17.16	95.00	97.96	0.25	1.79	0.00	10, 1956	
		Ky. Bluegrass...		14.40	14.68	85.00						
C-400	Components: Ky. Bluegrass Illahoe Red Fescue... Highland Colonial Bent... Festuca spp... (Illahoe & Creeping Red fescue)											
				48.00	46.72	85.00						
				39.40		95.00						
				9.85	11.25	95.00	97.25	0.50	2.20	0.05	3, 1957	
					36.12	89.00	94.09	0.43	5.48	0.00	4, 1957	
C-397	O. M. Scott & Sons, Marysville, Ohio Arthur R. Wills Hardware Co., Medfield Family Lawn No. 54 Mixture, Lot No. 1090014	Components:										
		Chewings Fescue...		42.58		85.00						Declared but a mixture of Illahoe and commercial Red fescue found.
		Creeping Red Fescue...		27.16		80.00						
		Ky. Bluegrass...		20.12	19.52	75.00	96.42	0.09	3.49	0.00	1, 1957	
		Poa trivialis...		6.56	7.24	75.00	97.58	0.33	1.57	0.52	4, 1957	
	(Chewings & Creeping Red fescue)											
	Other crop seeds exceeds that stated.											

Vaughan's Seed Co., N. Y. C.
B. W. Brown Grain Co., Concord
Vaughan's Merion Formula Mixture, Lot No. 79

C-386

Components:									
Merion Strain Ky. Bluegrass	40.50	43.86	75.00	77.00	L	94.40	0.15	3.20	2.25
Chewings Red Fescue	26.75	90.00	90.00	90.00	F	95.79	0.04	2.38	1.79
Highland Bent	12.75	90.00	90.00	90.00					
Penn. Lawn Cr. Red Fescue	9.80	85.00	85.00	85.00					
Redtop	4.60	16.06	97.00	97.00					
Agrostis spp.									
(Highland bentgrass & Redtop)									
Festuca spp.		35.87	88.00	88.00					
(Chewings & Penn. Lawn fescue & Creeping Red fescue)									
Paulini & Vespa Bros., Inc., Newton Center									
Dense Shade Seed Mixture, Lot No. 723					L	95.75	0.25	4.00	0.00
					F	94.68	0.39	3.01	1.92
Components:									
Penn. State Chewings	44.10	90.00	90.00	90.00					
Poa trivialis	20.30	24.70	80.00	79.00					
Highland Bent	19.60	20.01	88.00	94.00					
Creeping Red Fescue	11.75	90.00	90.00	95.00					
Festuca spp.		49.79							
(Penn. State & Creeping Red Chewings)									
Whitney Seed Co., Buffalo, N. Y.									
Haley's Grain Store, Palmer					L	94.90	0.30	4.55	0.25
Haley's Green Lawnseed Special Mixture, Lot No. 8057					F	93.85	0.24	5.67	0.24
Components:									
Chewings Fescue	44.10	85.00	77.00	77.00					
Ky. Bluegrass	21.25	20.52	75.00	91.00					
Domestic Ryegrass	14.85	14.85	90.00	91.00					
Highland Bentgrass	14.70	15.39	80.00	91.00					
Festuca spp.		43.09							
(Commercial Red fescue, some chewings)									
Whitney Seed Co., East Deerfield									
City Park Special Mixture, Lot No. CP-257					L	96.08	0.40	2.80	2.75
					F	96.07	0.29	2.71	0.93
Components:									
Common Ryegrass	39.20	27.08	90.00	93.00					
Perennial Ryegrass	19.60	15.11	90.00	93.00					
Ky. 31 Tall Fescue	14.70	13.64	80.00	82.00					
Ky. Bluegrass	12.75	17.05	70.00	69.00					
Meadow Fescue	6.86	5.59	80.00	75.00					
White Clover	2.94	4.47	81.00	81.00					
Chewings Fescue		13.13	87.00	87.00					

C-457

B-99

Declared but commercial Red fescue found.

Given formula totals more than 100%.

Percentage less than that stated.

Percentage exceeds that stated.

Found but not declared.

B-47

Results of Inspection and Germination of Vegetable Seeds Sections 261 B2 and 261 C.

Each separate container of Vegetable Seeds must be labeled to indicate plainly the kind of seed and variety and the name and address of the person who labeled such seed or who sells, offers, or exposes it for sale. For seeds that germinate less than the Massachusetts Standard, the label must also indicate the percentage of germination exclusive of hard seeds, percentage of hard seeds if present, calendar month and year the test was completed, and the words "Below Standard" in not less than 8-point type. Date of test shall not be more than nine months old, exclusive of the month in which the test was completed. Seed that has a false or misleading label may not be sold or offered for sale.

Five hundred and sixty-nine samples of vegetable seeds were received and tested in the laboratory; however, Table 3 includes only those samples that were found to be mis-labeled with regard to requirements of the law.

The wholesaler's name, in all instances, and the germination for those samples of seed found below standard in germination are in boldface type. In samples for which the found germination is not in boldface, the germination is above standard but below germination stated.

Table 3

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Variety or Seed & Lot Number	Germination				Mass. Standard %
			Given		Found		
			%	Date of Test	%	Month of Test	
		Joseph Breck & Sons, Boston, Mass.					
C-37	Cucumbers	Westboro State Hospital, Westboro Dunsmuir Ballroad, No. 5388-38	80	1 1957	62	5 1957	75
		W. Atlee Burpee Co., Philadelphia, Pa.					
C-38	Beans	Littlefield-Wynian Nurseries, Inc., Abington Top Cross No. 5084	80	1 1957	68	4 1957	75
C-39	Peas	International Seed Co., N. Y. No. 1608	85	12 1956	67	3 1957	55
		Ferry Morse Seed Co., Detroit Michigan					
C-45	Peas	Atlas Paint & Supply Co., Clinton New York	—	9 1957	40	6 1958	80
		Chas. C. Hart Seed Co., Wethersfield, Conn.					
C-46	Beans	Hyannis Hardware Co., Hyannis Dunsmuir Seed	60	1 1956	47	7 1958	60
C-399F	Beans	C. H. Symmes Co., Winchester Dwarf Stringless Green Pod	65*	12 1956	77	5 1957	75
		Budd D. Hawkins Co., Reading Vt.					
C-48	Peas	Lamson's Inc. Hardware, Marlboro Orchard	80	10 1956	75	10 1957	80
		D. Landreth Seed Co., Philadelphia, Pa.					
C-395	Beans	Smith Mills Hardware Co., Inc., N. Dartmouth Dunsmuir No. 311	78	1 1957	49	7 1958	80
C-336	Kale	Landreth Seed Co., Philadelphia, Pa.	60	8 1957	64	7 1958	80
		Page Seed Co., Green, N. Y.					
C-54	Cucumbers	Clinton Hardware & Gift, Clinton Dunsmuir No. 1608	60	1 1957	39	7 1958	50

*Given germination below standard and not declared.

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Variety of Seed & Lot Number	Germination				
			Given		Found		Mass. Stand- ard %
			%	Date of Test	%	Month of Test	
C-330	Beet	J. H. Fairbanks Co., Bridgewater Detroit Dark Red, No. D8-7557	80	12/1956	58	4/1957	75
B-192	Onion	L. Propel Hardware Co., Willimansett Green Scallion.	75	1/1957	61	5/1957	70
		Woodruff's Triple "T" Seeds, Inc., Weathersfield, Conn.					
C-385F	Beans	B. W. Brown Grain Co. Concord Pencil Pod Black Wax.	65	12/1956	77	4/1957	75
		S. D. Woodruff & Sons, Inc., Orange, Conn. * * *					
C-358F	Radish	Manny's Hardware Co., Taunton Scarlet Globe, No. 15425.	90	12/1956	55	5/1957	75

*Given germination below standard and not declared.

FIELD TESTS OF VEGETABLE SEEDS TYPE AND VARIETY STUDIES—SECTION 261 H

Conducted by the Seed Laboratory*

Nineteen-hundred fifty seven marks the 22nd year field trials have been conducted by the Seed Laboratory to determine the truthness-to-type of certain kinds of vegetable seed offered for sale in the State. Tests were run on Beans, Carrots, and Radishes from a collection made by the State Seed Inspectors. These samples were taken from 64 retail establishments and represent the offerings of 28 wholesale seedsmen in the State.

Fifty-one lots of green and wax beans, seventy-seven lots of carrots, and forty-six lots of radish were field tested from samples taken throughout the Commonwealth by the State Seed Inspectors. All were given laboratory germination tests prior to the field testing.

The beans were planted May 22nd. Each lot was a twenty-five foot row, with the rows three feet apart. All lots were duplicated at random in the field, and for each variety planted in the trials an authentic check sample was also duplicated at random in the field. Only those varieties of beans were planted where the seed characteristics were difficult to differentiate from observations of the seed alone.

No lots of beans were found to disagree with the variety name as stated on the label or packet; however, the desirability of the different lots of the same variety was quite evident; note the following table. It is not, however, the function or policy of the Seed Laboratory to place ratings on the field tests.

In an attempt to further emphasize the statement that different lots of the same variety are not all of the same value to a grower, a study was made on the yields of certain bean varieties in our field trials. This study was set up in the following manner: The first twenty-five plants in every row were counted out and marked. Prior to this each row had been thinned so that the first twenty-five plants made up approximately the same distance in the row. Every variety had its guard rows and its own authentic sample, plus a duplicated set of plantings. Five harvestings were made on each variety of bean and its duplicate when it was considered the beans were marketable. All lots of the same variety were picked on the same day. Everything was done to make it equal for all lots. Below is a table listing the results found on yield studies of the four varieties selected for study.

Table 4

Tendergreen

Sample No.	Total wt. (50 plants) in lbs. & oz.	Total Oz.	Remarks
1	24 lbs. 6 oz.	390 oz.	The poorest lot yielded 36% less by weight than the best lot.
2	26 lbs. 13 oz.	429 oz.	
3	20 lbs. 11 oz.	331 oz.	
4	18 lbs.	288 oz.	The poorest lot yielded 23% less than the average lot.
5	21 lbs. 1 oz.	337 oz.	
6	25 lbs. 15 oz.	415 oz.	
7	23 lbs. 12 oz.	380 oz.	The best lot yielded 12% more than the average lot.
8	26 lbs. 10 oz.	426 oz.	
9	21 lbs. 10 oz.	346 oz.	
10	25 lbs. 14 oz.	414 oz.	
11	24 lbs. 5 oz.	389 oz.	
12	21 lbs. 3 oz.	339 oz.	
Average	23 lbs. 4 oz.	372 oz.	

*Waldo C. Lincoln, Research Instructor
Kenneth Pelton, Laboratory Assistant

Contender

Sample No.	Total wt. (50 plants) in lbs. & oz.	Total Oz.	Remarks
1	32 lbs. 1 oz.	513 oz.	The poorest lot yielded 14% less than the best lot. The poorest lot yielded 6% less than the average lot. The best lot yielded 6% higher than the average lot.
2	27 lbs. 13 oz.	445 oz.	
3	29 lbs. 2 oz.	466 oz.	
4	30 lbs. 6 oz.	486 oz.	
5	28 lbs.	448 oz.	
Average	29 lbs. 7 oz.	471 oz.	

Cherokee

Sample No.	Total wt. (50 plants) in lbs. & oz.	Total Oz.	Remarks
1	20 lbs. 4 oz.	324 oz.	The poorest lot yielded 23% less than the best lot. The poorest lot yielded 11% less than the average lot.
2	18 lbs. 12 oz.	300 oz.	
3	19 lbs. 12 oz.	316 oz.	
4	18 lbs. 15 oz.	303 oz.	
5	18 lbs. 5 oz.	293 oz.	
6	18 lbs. 11 oz.	299 oz.	The best lot yielded 15% more than the average lot
7	23 lbs. 10 oz.	378 oz.	
8	23 lbs. 9 oz.	377 oz.	
9	22 lbs. 8 oz.	360 oz.	
Average	20 lbs. 7 oz.	327 oz.	

Stringless Black Valentine

Sample No.	Total wt. (50 plants) in lbs. & oz.	Total Oz.	Remarks
1	22 lbs. 1 oz.	353 oz.	The poorest lot yielded 29% less than the best lot.
2	26 lbs. 10 oz.	426 oz.	
3	18 lbs. 15 oz.	303 oz.	The poorest lot yielded 16% less than the average lot.
4	21 lbs. 15 oz.	351 oz.	
Average	22 lbs. 6 oz.	358 oz.	

The purpose of these bean studies was to determine first if there was a significant difference between lots of the same variety; and secondly, if there was a difference, how the difference could be of great importance to a commercial grower.

It can be seen from the above tables that our first reason for the bean studies does show that there is a significant difference between lots of the same variety. This range of difference runs to as high as 36% as was the case with Tendergreen. Secondly, it seems obvious that this 36% should be of great interest to a commercial grower. Putting it more plainly, it can be expected to commonly produce 85 bushels of beans to an acre, but if the above poor strain was grown and produced 36% less per acre, then the resultant 55 bushels per acre is self explanatory.

It certainly would seem that only the best seed should be planted from the most reliable seedsmen.

On May 23rd forty-six lots of radish were planted in 12 foot rows with the rows 3 feet apart. All samples were duplicated at random in the field with authentic check samples for all varieties grown.

For the first time in the many years that radishes have been field tested there were no violations. All packets and labels bore the correct name as found from the field performance. Most varieties performed very well. All lots of Cherry Belle including the authentic check, however, were not too satisfactory.

Seventy-seven lots of carrots were also planted on May 23rd. Each lot was planted in rows fifteen feet long and three feet apart. Each lot was duplicated at random in the field, and for each variety an authentic check sample was also duplicated at random in the carrot plantings. Due to a heavy soil packing rainstorm which caused only fair germination the carrots were replanted on June 19th. The records and observations that could not be made from the first planting due to a poor stand of plants were later obtained from the second planting.

Although the carrots as a whole were not as desirable as one would hope for there was only one definite violation as to type. No. C-331 Chantenay Red Cored whole-saled by Woodruff's Triple "T" and retailed by Rome Bros., Hardware Co., Rockland, Mass., was not at all a Chantenay Red Cored carrot, but rather more of the Danvers type.

STUDIES OF FLOWER SEEDS

Section 261 H

Conducted by the Seed Laboratory*

1957 marks the twenty-second year that field studies have been made by the Seed Laboratory to determine the quality of flower seed offered for sale in various retail outlets and to flower growers throughout the State. Seed of 383 lots, representing 6 genera packeted by 28 wholesalers or distributors, were obtained from 72 retailers or grower sources by the State Seed Inspectors. All samples were given germination tests in the laboratory. Six samples received too late were not grown in the field trials and one sample not grown in the field but laboratory tested was a biennial.

This year marks the first major change in the flower field studies. Only six genera were tested in the field instead of the 50 to 60 as has been done in the past. It is felt that by so doing a complete and thorough inspection can be made on the six genera tested. The number of lots in the trials were relatively the same. The six genera selected for field study were Alyssum, Aster, Calendula, Marigold, Petunia, and Zinnia.

All the flowers were planted May 23rd and 24th. Seeds were sown in 10-foot sections in the row and rows were three feet apart. In all cases one packet of seed was sufficient to plant the desired section. All lots were given germination tests in the laboratory and the laboratory tests are listed for those lots found unsatisfactory in the field. A heavy rain immediately following the planting caused severe packing of the soil and in some instances with the smaller seeded types a poor stand of plants resulted. The weather throughout the remainder of the growing season was fine.

The following table lists those samples that were found to differ in the field from that stated on the seed packet.

* Waldo C. Lincoln, Jr., Research Instructor
Kenneth Pelton, Laboratory Assistant

Table 5. Flower Seed Inspection

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected and Variety of Seed	Laboratory Germination %	Field Test Performance
C-38	Petunia	Geo. J. Ball, Inc., W. Chicago, Ill. Spencer Farms, Woburn Heavenly Blue.....	64	Found to be 92% dark violet color.
A-243	Alyssum	Luther Burbank Seed Co., Philadelphia, Pa. Felber Paint & Seed Co., Brocton Carpet of Snow.....	53	Not Alyssum maritimum var. procumbens, but is rather Alyssum maritimum.
A-244	Marigold	Best Dwarf French Double Mixed	33	Not a dwarf French type. All plants are of a medium tall type with double orange and yellow flowers.
A-88	Marigold	W. Atlee Burpee, Philadelphia, Pa. W. T. Grant Co., Rockland Spy.....	65	The flower centers are a deep orange to a golden yellow. More like the variety Harmony or Orbit.
A-87	Zinnia	Cut & Come Again.....	75	Found to be a mixture of seven of the larger flowered types.
A-55	Zinnia	Ferry-Morse Seed Co., Detroit Mich. Bellingham Hardware Co., Weymouth Landing Peppermint Stick.....	95	Only 5% showed any characteristic striping.
C-40	Petunia	Joseph Harris Seed Co., Rochester, N. Y. Spencer Farms, Woburn Heavenly Blue.....	57	All plants but one have small, dark lavender flowers with white throats.
A-36	Marigold	Charles C. Hart Seed Co., Wethersfield, Conn. J. McFarland & Son, Wollaston Harmony.....	49	Is a mixture of several types of the French hybrids.
A-3	Aster	Mandeville & King Co., Rochester, N. Y. L. Richmond Co., Brockton King All Colors.....	82	Found to be all one color, a pinkish rose.
A-46	Zinnia	Northrup, King & Co., Minneapolis, Minn. F. W. Woolworth & Co., Quincy Peppermint Stick.....	82	Only 40% showed any of the characteristic striping.
A-179	Petunia	The Page Seed Co., Greene, N. Y. Wm. H. Casey Store, Milford Howard's Star.....	80	Found to be a mixture of five types besides Howard's Star strain is also poor as they are mostly all white.
A-239	Petunia	J. H. Fairbanks Co., Bridgewater Rosy Morn.....	57	Found to be a mixture of four varieties.
A-253	Alyssum	Sears, Roebuck & Co., Chicago, Ill. Sears, Roebuck & Co., Gloucester White.....	72	White is not a variety name. Sample was found to be the var. procumbens type rather than the straight Alyssum maritimum

**Table 6. Summary, by Wholesalers, of the Performance
of Flower Seeds in the Field**

Seeds Packeted by	Total No. Samples Tested	No. Samples Satisfactory	No. Samples Unsatisfactory
Ball, George K. Co..... West Chicago, Ill.	14	13	1
Breck, Joseph, & Sons, Inc..... Boston, Mass.	20	20	0
Burbank, Luther & Co..... Philadelphia, Pa.	4	2	2
Burpee, W. Atlee Co..... Philadelphia, Pa.	29	27	2
Comstock, Ferre & Co..... Wethersfield, Conn.	6	6	0
Crossman Seed Corp..... Rochester, N. Y.	26	26	0
Deering Zinnia Gardens..... Maroa, Ill.	6	6	0
De Jager & Sons, Inc..... So. Hamilton, Mass.	4	4	0
Fredonia Seed Co..... Fredonia, N. Y.	14	14	0
Ferry-Morse Seed Co..... Detroit, Mich.	35	34	1
Germain's, Inc..... Los Angeles 22, Calif.	7	7	0
Harris, Joseph Co..... Rochester, N. Y.	16	15	1
Hart, Charles C., Seed Co..... Wethersfield, Conn.	24	23	1
Hawkins, Budd D..... Wethersfield, Conn.	6	6	0
Hygrade Seed Co..... Fredonia, N. Y.	6	6	0
Irwin, Tom..... Rowley, Mass.	1	1	0
Lancaster County Seed Co..... Paradise, Pa.	3	3	0
Mandeville & King Co..... Rochester, N. Y.	38	37	1
Northrup, King & Co..... Minneapolis, Minn.	32	31	1
The Page Seed Co..... Greene, N. Y.	14	12	2
Pelletized Seed Co..... New York, N. Y.	5	5	0
Rice, Jerome B., Jr..... Cambridge, N. Y.	4	4	0
Rice, Jerome Seed Co..... Cambridge, Mass.	20	20	0
Ross Bros. Co..... Worcester, Mass.	10	10	0
Sears, Roebuck & Co..... Chicago, Ill.	8	7	1
Vaughan's Seed Store..... New York, N. Y.	12	12	0
Wirthmore Stores..... Concord, Mass.	6	6	0
Woodruff, F. H. & Sons..... Milford, Conn.	1	1	0
Woodruff, S. D. & Sons..... Orange, Conn.	2	2	0
Woodruff's Triple "T" Seed Co..... Wethersfield, Conn.	10	10	0
	383	370	13

Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Agricultural Products Co. West Kingston, R. I.				1	1	0	1	0	1
Associated Seed Growers, Inc., Milford, Conn.	26	26	0	1	1	0	2	1	1
Barnes of Minneapolis, Minneapolis, Minn.							1	0	1
Belt Seed Co., Baltimore, Md.				17	13	4	12	3	9
Better Turf Seed Co., Jersey City, N. J.				2	0	2	1	0	1
Bonnie Green Products, Philadelphia, Pa.							2	0	2
Boston Market Gardeners Ass'n., Boston, Mass.	3	3	0						
Breck, Joseph & Sons, Boston, Mass.	63	67	1						
Burpee, W. Atlee Co., Philadelphia, Pa.	28	26	2						
Comstock, Ferre & Co., Wethersfield, Conn.	37	37		3	2	1			
Cone, Arthur R., Inc., Buffalo, N. Y.	5	5	0	52	50	2	2	0	2
Cover Lawn Seed Co., Baltimore, Md.							2	0	2
Craver Dickinson Co., Buffalo, N. Y.				6	6	0			
Crawford's, E. Providence, R. I.							1	0	1
Crosman Seed Corp., Rochester, N. Y.	9	9	0	1	1	0			
Culkeen, Thos. F., Charlestown, Mass.							4	0	4
Dickinson, Albert Co., Chicago, Ill.				9	9	0			
Doughton Seed Co., Jersey City, N. J.				6	1	5	1	1	6
Druid Hill Park Seed Co., Baltimore, Md.							1	1	0
Eastern States Farmers' Exchange, W. Springfield, Mass.	37	37	0	15	13	2	3	0	3
Eberle, Frederick, Albany, N. Y.	4	4	0						
Edgewood Farms, Inc., Marysville, Ohio				1	1	0			
Ferry-Morse Seed Co., Detroit, Michigan	14	13	1						

Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory—Continued

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Flory Milling Inc..... Bangor, Pa.				2	2	0			
Flower Lane Farms..... Martinsville, N. J.							1	0	1
Forbes, Alexander Co..... Milburn, N. J.	2	2	0						
Fredonia Seed Co..... Fredonia, N. Y.	16	16	0						
Garfield Williamson Co..... Jersey City, N. J.							1	0	1
Harris, Jos. & Co..... Rochester, N. Y.	68	68	0						
Hart, Charles C. Seed Co..... Wethersfield, Conn.	45	43	2	9	8	1	2	1	1
Hawkins, Budd D..... Wethersfield, Conn.	6	5	1				2	0	2
Herbst Bros..... New York, N. Y.							1	0	1
Hygrade Seed Co..... Fredonia, N. Y.	4	4	0						
Independence Hall Seed Co..... Baltimore, Md.				1	1	0	4	1	3
Lancaster Seed Co..... Paradise, Pa.	4	4	0						
Landreth Seed Co..... Philadelphia, Pa.	14	12	2				1	0	1
Larrowe Mills, Inc..... Cohocton, N. Y.				1	1	0			
Lawn Grass Seeds, Inc..... Buffalo, N. Y.							1	1	0
Lawn Products Co..... Philadelphia, Pa.							1	0	1
Lee Patten Co..... Arlington, Mass.				5	2	3	5	3	2
Lyon, John D., Inc..... Cambridge, Mass.				7	7	0	5	3	2
Mandeville & King Co..... Rochester, N. Y.	9	9	0						
McCoullough Seed Co..... Cincinnati, Ohio				1	1	0			
Milford Hardware Co..... Milford, Conn.	1	1	0						
Northern Seed Co..... Providence, R. I.							1	0	1
Northrup, King & Co..... Minneapolis, Minn.	10	10	0	1	1	0			

Table 7. Summary, by Wholesalers, of the Total Number of Samples Tested in the Seed Laboratory —Concluded.

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Deer Seed Co. Greene, N. Y.	30	27	3	12	12	0	1	1	0
Pelletized Seed Co. New York, N. Y.	4	4	0	.....	.....	.....	.....	.....	.....
Philadelphia Seed Co. Philadelphia, Pa.	.....	.....	.....	13	10	3	1	0	1
Randolph Seed Co. Randolph, N. Y.	9	9	0	.....	.....	.....	1	1	0
Rice, Jerome B. Seed Co. Cambridge, N. Y.	14	14	0	.....	.....	.....	.....	.....	.....
Ross Bros. Worcester, Mass.	21	21	0	.....	.....	.....	.....	.....	.....
Rowe, Charles H. Philadelphia, Pa.	1	1	0	.....	.....	.....	.....	.....	.....
Scarlett, Wm. G. & Son. Baltimore, Md.	.....	.....	.....	82	31	1	5	3	2
Scott, O. M. & Co. Marysville, Ohio	.....	.....	.....	.....	.....	.....	1	0	1
Stanford Seed Co. Buffalo, N. Y.	.....	.....	.....	24	21	3	1	1	0
Tewell, L. Seed Co. Milwaukee, Wisconsin	.....	.....	.....	1	1	0	1	1	0
Town & Country Products Co. Jersey City, N. J.	.....	.....	.....	.....	.....	.....	1	1	0
Tri State Seed Co. Philadelphia, Pa.	9	9	0	.....	.....	.....	.....	.....	.....
Valley Feed & Co. Spring Valley, N. Y.	.....	.....	.....	.....	.....	.....	1	1	0
Vaughan's Seed Co. New York, N. Y.	9	9	0	5	4	1	.....	0	2
Whitney Seed Co. Buffalo, N. Y.	.....	.....	.....	64	53	11	3	1	2
Woodruff, F. H. & Sons. Milford, Conn.	38	38	0	.....	.....	.....	2	0	2
Woodruff, S. D. & Son. Orange, Conn.	10	9	1	.....	.....	.....	1	1	0
Woodruff's Triple "T" Seed Co. Wethersfield, Conn.	.....	5	1	.....	.....	.....	.....	.....	.....
	561	547	14	292	250	42	79	26	53

Thirty-eighth Annual Report of Pullorum Disease Eradication in Massachusetts



During the 1957-58 testing season, a total of 324 chicken, turkey, and pheasant flocks was tested. Among 1,040,027 samples tested, 0.0009 percent was positive, which is a definite decrease over the percentage (0.01) positive in the previous season. Only one infected breeding flock was detected which constituted a "break." At the close of the season all flocks were classified as negative. This is the first season in the testing history that 100 percent of all birds tested are in nonreacting flocks.

**THIRTY-EIGHTH ANNUAL REPORT OF PULLORUM
DISEASE ERADICATION IN MASSACHUSETTS
1957-58**

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INTRODUCTION

In the 1957-58 testing season 324 flocks were tested, which is slightly less than the number tested in 1956-57. Likewise, fewer samples (1,040,027) were tested than in the previous season. However, the percentage (0.0009) of positive tests was significantly less than that (0.01) of the previous season. Pullorum reactors were detected in only one flock which was classified as negative in 1956-57. At the close of the season all tested breeding flocks were classified as negative. Of the total birds tested 98.81 percent were found in 100 percent tested nonreacting flocks.

The laboratory appreciates the fine cooperation it has received from the Massachusetts poultry industry in striving to eradicate pullorum disease from its flocks. It is hoped that this concerted effort may become more effective in the years ahead to eliminate completely this disease from Massachusetts flocks.

We also wish to express our appreciation for the continuous cooperation received from the Cooperative Extension Service at the University of Massachusetts, Massachusetts Department of Agriculture and other agencies.

SUMMARY OF SERVICE RENDERED

Flocks tested.....	324
Chicken.....	269
Turkey.....	26
Pheasant.....	29
Number of tests.....	1,040,027
Chickens:	
Routine.....	1,006,013
Experimental.....	11,100
Fowl other than chickens:	
Routine.....	22,910
Experimental.....	4
Owners receiving necropsy service.....	30*
Necropsies of reacting birds.....	66**

* Includes one turkey and one pheasant flock.

** Includes one turkey and two pheasants.

Table 1. Distribution of Tests and Reactors by Counties and by Breeds

Breeds	Barnstable	Berkshire	Bristol	Essex	Franklin	Hampden	Hampshire	Middlesex	Norfolk	Plymouth	Worcester	Totals	Percent Positive
Rhode Island Reds													
Total tests.....	11	346	24,090	13,123	6,975	9,625	2,717	17,806	33,415	4,557	51,752	165,317	0.005
Positive tests.....	0	0	0	0	0	0	0	0	0	0	0	9	
New Hampshires													
Total tests.....	4,449		23,723	28,654		32	7,575	22,177	4,105	47,300	3,221	141,236	0.00
Positive tests.....	0		0	0		0	0	0	0	0	0	0	
Barred Plymouth Rocks													
Total tests.....	43	4,258	26,465	8,183	6,200	654	2,903	40,791	21,178	21,089	35,269	167,033	0.00
Positive tests.....	0	0	0	0	0	0	0	0	0	0	0	0	
White Plymouth Rocks													
Total tests.....	13,131	441	22,033	90,073	17,339	11,531	33,916	54,703	20,319	71,072	21,954	356,512	0.00
Positive tests.....	0	0	0	0	0	0	0	0	0	0	0	0	
White Leghorns													
Total tests.....		34,871	146	2,578	1,437	228	7,247	6,806	21,987		2,030	77,330	0.00
Positive tests.....		0	0	0	0	0	0	0	0		0	0	
Miscellaneous													
Total tests.....	4,460	576	7,574	17,164	1,636	314	3,995	15,360	11,909	17,115	29,582	109,685	0.00
Positive tests.....	0	0	0	0	0	0	0	0	0	0	0	0	
Total Tests.....	22,094	40,492	104,931	159,775	33,587	22,384	58,353	157,643	112,913	161,133	143,808	1,017,113	
Positive tests	0	0	0	0	0	0	0	0	0	0	0	9	
Number.....	0	0	0	0	0	0	0	0	0	0	0	9	0.0000

DISTRIBUTION OF TESTS AND REACTORS

A total of 1,017,113 chicken samples from 11 counties was tested and the percentage of positive tests was 0.0009 (table 1). Only Worcester County revealed reactors which were confined to one Rhode Island Red breeding flock that was negative the previous season. Plymouth, Essex, Middlesex, and Worcester Counties led in the number of samples tested.

The following breeds were tested: Australorp, Bantam, Barred Plymouth Rock, Columbian, Cornish, Crosses, Delaware, New Hampshire, Rhode Island Red, White American, White Leghorn, White Plymouth Rock, White Wyandotte.

The White Plymouth Rock, Barred Plymouth Rock, Rhode Island Red, New Hampshire, and White Leghorn were the predominating breeds tested. Of the total samples tested, 35.05 percent were taken from White Plymouth Rock, 16.42 percent from Barred Plymouth Rock, 16.25 percent from Rhode Island Red, 13.89 percent from the New Hampshire, and the remainder from other breeds.

Of the 925,518 samples collected from females 41,717 were from hens and 383,801 from pullets, with 0.011 and 0.0005 percent reactors respectively. Among the 91,595 samples collected from males none were positive.

ANNUAL TESTING OF FLOCKS

Table 2 lists the results from flocks tested (1) for the first time, (2) intermittently, (3) for two consecutive years, and (4) for three or more consecutive years.

In the group tested for the first time 46 flocks were tested which revealed no reactors. It is of interest to note that while the number of flocks more than doubled over that (22) of the previous season, the number of tested birds decreased from 52,912 to 37,166. The average number of birds to a flock in this group was 808. The increase in the number of the small fancy breed flocks tested explains the marked reduction in average flock size.

In the intermittent and two-year groups, no reactors were detected. The average number of birds per flock for the intermittent and two-year groups were 1,384 and 2,958, respectively.

In the group tested for three or more consecutive years, there were 184 flocks, representing 843,196 tests, of which 0.001 percent were positive. In comparing these results with those of the previous season, significant decreases are observed

Table 2. Annual Testing Versus Single and Intermittent Testing

Classification	Flocks	Birds	Total Tests	Positive Tests		Negative Flocks		Positive Flocks	
				Number	Percent	100-Percent Tested	Partially Tested	100-Percent Tested	Partially Tested
tested for the first time.....	46	37,166	37,166	0	0.00	45	1	—	—
intermittent testing.....	15	65,767	65,767	0	0.00	12	3	—	—
two consecutive years.....	24	70,984	70,984	0	0.00	24	—	—	—
three or more consecutive years.....	184	834,833	843,196	9	0.001	179	5	—	—
TOTALS.....	269	1,008,750	1,017,113	9	0.0009	260	9	—	—

in the number of flocks and samples tested. One flock was infected, but the infection was eliminated through retesting before the termination of the season. The average number of birds to a flock in this group was 4,537.

For all four groups 269 flocks were tested, representing 1,008,750 birds and 1,017,113 samples, of which 0.0009 percent were positive. The 260 flocks that were 100 percent tested and nonreacting contained 996,782 birds of 98.81 percent of the total birds tested. All tested breeding flocks were classified as negative at the termination of the season.

During the past year 64 or 23.53 percent of the flocks tested in 1956-57 were not tested. Annual testing of flocks is required by the National Poultry Improvement Plan. However, if flock owners find it necessary to omit testing for a year or more, they should procure replacement stock from officially recognized pullorum-passed and pullorum-clean flocks. Adequate precautions should be taken against the introduction of infection.

APPEARANCE OF INFECTION IN FLOCKS PREVIOUSLY NEGATIVE

Pullorum infection was detected in one breeding flock that was classified as negative the previous season. However, in 1956-57 this flock did reveal infection which was eliminated through retesting. It is possible that all of the infection was not eliminated which would explain the reappearance of infection in the 1957-58 testing season. On the first complete test of the flock, only two doubtful reactors were detected (one hen and one pullet). Only the pullet which gave the stronger reaction was called to the laboratory for examination. Gross pathological and bacteriological findings were negative. Serological results suggested pullorum infection quite strongly. The two pens (hens and pullets) were retested approximately four weeks after the first test. Five reactors were detected among the hens, two of which were submitted to the laboratory and *S. pullorum* was isolated. The birds in the pullet pen revealed only one doubtful reactor which was not examined but removed from the premises. Interestingly, the pullet and hen pens were in the same building but on two different floors. After discovery of definite infection the balance of the flock was retested and another group of pullets, in another building, revealed one reactor that yielded the organism on necropsy. The entire flock was subjected to two additional retests, two weeks apart, and no additional reactors were detected. Special attention will be given to this flock during the next six months.

Table 3 lists the incidence of "breaks" among Massachusetts tested flocks during the past 17 years. Flock owners and hatcherymen should observe constantly the strictest vigilance against the introduction and spread of the disease.

The following measures have been effective in establishing and maintaining a pullorum-free flock.

1. All the birds on the premises should be tested each year.
2. If infection is present, the entire flock should be retested within four to six weeks until a negative report is obtained, provided the value of the birds justifies the expenditure.
3. Every reactor, regardless of its value, should be removed from the premises and sold for slaughter immediately upon receipt of the report.
4. Offal from all birds dressed for market or home consumption as well as dead birds that are not fit for consumption should be burned.

**Table 3. Incidence of "Breaks" Observed During the
Past Seventeen Years**

Year	Number of Flocks	Breaks		Flocks with Less than 0.5 Percent Infection on First Test	
		Number	Percent	Number	Percent
1942	255	6	2.35	3	50.00
1943	286	13	4.54	8	61.54
1944	289	17	5.88	13	76.47
1945	340	21	6.18	17	80.95
1946	388	20	5.15	14	70.00
1947	430	17	3.95	9	52.94
1948	425	16	3.76	13	81.25
1949	386	6	1.55	3	50.00
1950	383	18	4.70	16	88.88
1951	381	6	1.57	6	100.00
1952	360	8	2.22	5	62.50
1953	316	7	2.22	4	57.14
1954	291	2	0.69	2	100.00
1955	275	5	1.82	2	40.00
1956	254	0	0.00	0	0.00
1957	233	1	0.43	0	0.00
1958	208	1	0.48	1	100.00

5. The poultry houses, runs, and equipment should be thoroughly cleaned and disinfected immediately after removal of reactors. An empty pen to each house should be provided to facilitate cleaning and disinfection during the winter months. Disinfectants approved by the United States Department of Agriculture should be used.

6. Birds removed from the premises to egg-laying contests, exhibitions, etc., should be held in quarantine and determined free of disease before they are readmitted into the flock.

7. Purchase of stock in the form of adults, chicks, and eggs should be from known pullorum disease-free flocks. The Massachusetts Department of Agriculture, 41 Tremont Street, Boston, should be consulted regarding additions or replacements in the flock.

8. Eggs should not be saved for hatching until after a flock has been tested and all the infected birds removed. Early pullet testing will permit early hatching.

9. Fresh and infertile eggs from unknown or infected sources should not be fed to chickens or exposed to birds or animals, such as crows, sparrows, and skunks, that may carry or spread the infection.

10. Poultrymen should not custom-hatch for untested or infected flocks (including fowl other than chickens).

11. Owners of pullorum disease-free flocks should not permit hatching where infected eggs or stock may be found.

12. Poultrymen should not buy feed in bags that have been used or exposed to infection. (Such bags if properly disinfected will be safe for further use.)

13. Poultrymen should regard fowl other than chickens as a possible source of pullorum infection unless tested and found free from pullorum disease.

14. Poultrymen should not use equipment that has been exposed to or contaminated with infective material unless it is properly cleaned and sterilized or disinfected.

TESTING OF FOWL OTHER THAN CHICKENS

During the past year 22,914 samples from fowl other than chickens, including 15,989 turkeys, 5,653 pheasants, 844 quail, 285 partridge, 76 ducks, 32 geese, 23 pigeons, 7 guinea fowl, and 5 pea fowl, were tested. No reactors were detected.

NONREACTING FLOCKS CLASSIFIED BY COUNTIES

This is the first season in the entire testing history that all tested flocks have been classified as nonreacting. A total of 269 nonreacting flocks, representing 1,008,750 birds, was identified in 11 counties, as listed in table 4. A total of 260 flocks was 100 percent tested, whereas 9 flocks were partially tested. The latter group constituted 11,968 birds in six counties. Partial flock testing is not recommended to determine the true status of a flock. It is encouraging that 98.81 percent of all birds tested are in 100 percent nonreacting flocks, and it is hoped that in the near future all flocks will be 100 percent tested.

It was stated in previous sections that only one flock revealed infection which was eliminated through retesting. The laboratory appreciates the splendid cooperation received from the flock owners in the attempts to eradicate the disease. It is hoped that flock owners will continue to cooperate to the fullest extent in order that the disease may be eradicated from the Massachusetts poultry industry.

Table 4. Nonreacting Flocks Classified by Counties

County	100% Tested		Partially Tested		Totals	
	Flocks	Birds	Flocks	Birds	Flocks	Birds
Barnstable.....	9	22,094	—	—	9	22,094
Berkshire.....	11	40,492	—	—	11	40,492
Bristol.....	31	102,713	2	2,218	33	104,931
Essex.....	32	157,523	1	2,252	33	159,775
Franklin.....	15	33,557	1	30	16	33,587
Hampden.....	10	22,384	—	—	10	22,384
Hampshire.....	20	58,335	1	18	21	58,353
Middlesex.....	36	150,267	3	7,376	39	157,643
Norfolk.....	23	111,565	—	—	23	111,565
Plymouth.....	46	161,059	1	74	47	161,133
Worcester.....	27	136,793	—	—	27	136,793
Totals.....	260	996,782	9	11,968	269	1,008,750

COMPARISON OF THE 1956-57 AND 1957-58 TESTING

Table 5 lists testing data for the two seasons. Fewer flocks, birds, and samples were tested this season than in 1956-57. Only two counties (Hampshire and Middlesex) had an increase in the number of tested birds, whereas, among the other counties, Bristol had the largest decrease, approximately 36,000 birds. The results for the two seasons reveal that definite progress is being made in the eradication of the disease.

Table 5. Comparison of 1956-57 and 1957-58 Testing

County	Flocks	Birds	Tests	Positive Tests Percent	Nonreacting Flocks
1956-57 Season					
Gloucestershire	4	22,896	22,896	0.00	4
Wiltshire	7	43,077	43,077	0.00	7
Bristol	39	140,979	172,754	0.02	39
Devon	38	170,593	170,708	0.00	38
Gloucestershire	17	45,017	45,017	0.00	17
Gloucestershire	11	34,016	34,016	0.00	11
Hampshire	21	50,369	54,575	0.00	21
Middlesex	41	151,060	155,856	0.03	40
Suffolk	27	123,611	123,611	0.00	27
Wiltshire	39	174,452	175,154	0.00	39
Gloucestershire	28	136,986	147,168	0.04	28
Totals	272	1,093,056	1,144,832	0.01	271
1957-1958 Season					
Gloucestershire	9	22,094	22,094	0.00	9
Wiltshire	11	40,492	40,492	0.00	11
Bristol	33	104,931	104,931	0.00	33
Devon	33	159,775	159,775	0.00	33
Gloucestershire	16	33,587	33,587	0.00	16
Gloucestershire	10	22,384	22,384	0.00	10
Hampshire	21	58,353	58,353	0.00	21
Middlesex	39	157,643	157,643	0.00	39
Suffolk	23	111,565	112,913	0.00	23
Wiltshire	47	161,133	161,133	0.00	47
Gloucestershire	27	136,793	143,808	0.006	27
Totals	269	1,008,750	1,017,113	0.0009	269

THIRTY-EIGHT-YEAR PULLORUM DISEASE TESTING SUMMARY

The thirty-eight-year testing summary listed in table 6 reveals that the 1957-8 season has the lowest percentage of positive tests and the highest percentage of birds in nonreacting flocks. It appears hopeful that in the future no infected flocks will be detected during an entire season.

Table 6. Thirty-Eight-Year Pullorum Disease Testing Summary

Season	Flocks	Birds	Total Tests	Positive Tests Percent	Non-reacting Flocks	Birds in Non-reacting Flock	
						Number	Percent
1920-21.....	108	24,718	24,718	12.50	25	2,414	9.7
1921-22.....	110	29,875	29,875	12.65	27	4,032	13.5
1922-23.....	121	33,602	33,602	7.60	29	5,400	16.1
1923-24.....	139	59,635	59,635	6.53	38	11,082	18.6
1924-25.....	156	66,503	66,503	2.94	79	25,390	38.2
1925-26.....	201	67,919	67,919	2.31	124	33,615	49.5
1926-27.....	249	127,327	127,327	4.03	114	40,269	31.6
1927-28.....	321	190,658	232,091	5.35	138	80,829	42.4
1928-29.....	413	254,512	304,092	3.56	228	153,334	60.3
1929-30.....	460	331,314	386,098	2.17	309	203,038	66.1
1930-31.....	447	356,810	402,983	1.47	328	267,229	74.0
1931-32.....	455	377,191	420,861	0.90	355	298,534	79.4
1932-33.....	335	296,093	300,714	0.47	276	238,074	80.1
1933-34.....	262	263,241	284,848	0.53	229	212,782	80.3
1934-35.....	244	281,124	301,887	0.39	213	251,778	83.4
1935-36.....	252	329,659	344,081	0.30	230	315,215	91.6
1936-37.....	307	448,519	561,762	0.37	281	424,431	94.9
1937-38.....	308	480,227	497,769	0.17	286	457,466	95.9
1938-39.....	355	571,065	615,205	0.34	327	469,134	82.8
1939-40.....	346	573,000	673,222	0.51	332	497,356	86.0
1940-41.....	309	527,328	538,589	0.09	299	492,475	93.2
1941-42.....	366	653,080	662,715	0.27	350	591,628	90.0
1942-43.....	332	637,666	649,137	0.48	317	600,607	94.1
1943-44.....	413	762,066	791,596	0.11	386	721,229	94.0
1944-45.....	458	836,481	943,987	0.12	431	792,551	94.5
1945-46.....	538	1,125,737	1,225,594	0.12	513	1,085,726	96.7
1946-47.....	562	1,156,147	1,238,983	0.13	534	1,112,043	96.3
1947-48.....	494	1,219,957	1,272,547	0.10	476	1,185,852	97.1
1948-49.....	458	1,179,481	1,213,073	0.04	452	1,171,363	99.3
1949-50.....	475	1,360,865	1,444,364	0.06	465	1,344,860	98.0
1950-51.....	448	1,358,540	1,394,192	0.05	442	1,339,068	98.2
1951-52.....	417	1,343,955	1,370,430	0.016	412	1,324,195	98.9
1952-53.....	371	1,155,359	1,168,739	0.04	366	1,146,932	99.0
1953-54.....	338	1,178,090	1,195,159	0.004	335	1,170,936	99.6
1954-55.....	311	1,101,543	1,160,822	0.13	306	1,085,449	98.6
1955-56.....	285	1,077,449	1,144,365	0.08	283	1,071,031	99.7
1956-57.....	272	1,093,056	1,144,832	0.01	271	1,091,667	99.8
1957-58.....	269	1,008,750	1,017,113	0.0009	269	1,008,750	100.0

ERADICATION OF PULLORUM DISEASE IN NONBREEDING FLOCKS

During the past year all known and suspicious foci of pullorum disease were investigated and measures taken to eradicate the infection from the premises involved. Flocks on thirteen different premises were either found infected or were

considered suspicious of harboring the disease. In all but one instance the flocks consisted of mature chickens. The single chick case was a broiler flock which originated from an out-of-state hatchery.

In eight of the twelve adult flocks acute outbreaks of pullorum disease, accompanied with a high morbidity rate, a significant mortality, and a decline in egg production were observed. In two adult flocks the infection was detected in exhibition birds when tested at the Boston Poultry Show. The remaining two adult flocks had a suspicious history of pullorum disease but did not reveal evidence of infection when tested with the agglutination method.

Table 7.

Pullorum Disease Eradication Results in Thirteen Nonbreeding Chicken Flocks

FLOCK NO.	METHODS OF ERADICATION
1	Periodic testing and partial depopulation.
2	Partial depopulation.
3	Testing followed by total depopulation.
4	Periodic testing and partial depopulation.
5	Partial depopulation followed by testing.
6	Total depopulation.
7	Testing and partial depopulation.
8	Total depopulation.
9	Complete flock test.
10	Partial depopulation followed by testing.
11	Total depopulation after 10 weeks of age.
12	Partial test with no reactors.
13	Total flock tested with no reactors.

Flocks 1 to 8: Mature birds which experienced acute outbreaks identified by isolation of *S. pullorum*.

Flocks 9 and 10: Mature birds with chronic pullorum disease identified with the tube agglutination test.

Flock 11: A chick flock which experienced an acute outbreak identified by isolation of *S. pullorum*.

Flocks 12 and 13: Mature birds which had a suspicious history of pullorum disease.

Table 7 gives a brief summary of the findings in the thirteen flocks and the manner in which the infection was eliminated. In eight flocks the tube agglutination test was used as a means to establish a clean flock. A total of 49,167 samples was tested from some of these flocks. The cooperation received from the flock owners has been most gratifying in our efforts to eliminate the known foci of in-

fection. Also, appreciation should be extended to the County Extension Service and the Massachusetts Department of Agriculture for the valuable assistance given in the eradication of these flock infections.

Credit should also be given to the diagnostic laboratories at Waltham and Amherst for identifying these outbreaks.

It should be mentioned that a total of 977 chickens was tested at the 1958 Boston Poultry Show which revealed six reactors originating from two different premises in Massachusetts.

COMMENTS AND SUGGESTIONS

Filing Applications for Testing: The laboratory is experiencing increasing difficulty with flock owners not returning their applications for testing. At the beginning of each season, flock owners who received testing service the previous season are sent application cards for the next year's work. Applications are processed in the order that they are received from the owners. Flock owners who delay or fail to return their cards cannot expect immediate testing service. It should be emphasized that the testing load has to be distributed over several months instead of two or three months, because it is practically impossible to employ personnel for only a few months. Furthermore, all breeding flocks should be tested as soon as the birds are five months of age, provided the laboratory is in a position to do so.

Increased Efforts Toward Pullorum Disease Eradication: The testing results that have been accumulated over the years and supported by the findings in the diagnostic laboratories definitely reveal that pullorum disease can be eradicated from our breeding flocks. However, our efforts should be projected beyond the breeding flocks which will include the eradication of all foci of infection wherever they may be found. Appropriate and effective measures for eradication should be devised and adopted. The following recommendations, which have been approved by the Massachusetts Federation of Poultry Associations, may serve as a basis for a general eradication program.

I. Handling of flocks with acute outbreaks:

A. Affected chicks should be destroyed or reared for broilers. If early liquidation is not possible, then infection should be eliminated through short interval retesting.

B. In adult flocks special precautionary measures should be instituted to prevent the disease from spreading within the flock or to other flocks.

1. Flocks in the acute stage of the disease should not be sold.
2. Affected pens should be isolated if possible.
3. Medication should be given under the supervision of competent persons.
4. After the disease has subsided the flock should either be sold or tested at short intervals.

C. The use of drugs in an acute outbreak should be exercised only upon recommendation by competent persons.

II. Handling of infected tested breeding flocks:

A. Flock owners desiring official recognition are compelled to eradicate the disease from their flocks.

B. Infected breeding flocks whose owners do not wish to receive official recognition should be subjected to a planned eradication program.

III. Specific sanitary and control measures:

A. Upon identification of infection, effective plans should be applied regarding movement and sale of stock.

1. Infected semi-mature and mature flocks when sold should be slaughtered.
2. Reactors should be removed and sold for slaughter as soon as possible.
3. Immediately upon detection of infection in breeder and commercial hatcheries, effective plans should be instituted to prevent the further spread of the disease.

B. Sanitary conditions consistent with a sound eradication program should be maintained on all contaminated premises.

C. Only flocks that meet the qualifications of the pullorum-passed and pullorum-clean grades should be permitted to produce hatching eggs.

D. The purchase of pullorum-clean stock should be more widely advocated.

E. All birds entered in shows and contests should be free of pullorum disease as determined by the agglutination test.

F. Regulatory aid should be requested for flock owners refusing to cooperate on a voluntary basis.

G. The testing of infected flocks should be done on a free basis by an official state agent.

H. An extensive educational program should be a vital part of the eradication campaign.

Massachusetts Law Requires Only Pullorum-Passed and Pullorum-Clean Stock May Be Sold: In 1957 a pullorum disease law was enacted in Massachusetts that will expedite the eradication of the disease within the State. The Law reads as follows:

"Chapter 129 of the General Laws is hereby amended by inserting after section 26A the following section:—*Section 26B.* No person shall buy, sell or transport within or import into the commonwealth hatching eggs, baby chicks or live poultry, except poultry intended for immediate slaughter or for exhibition subject to permit granted by the state department of agriculture, unless such hatching eggs are the produce of flocks which meet, and such baby chicks or live poultry meet or are the first generation progeny of flocks which meet, the minimum requirements for 'pullorum passed' or 'pullorum clean' grades of poultry, as established by the commissioner of agriculture, or the equivalent thereof. Whoever, himself or by his

servant or agent, violates any provision of this section shall be punished for the first offence by a fine of not more than one hundred dollars, and for a subsequent offence by a fine of not less than fifty nor more than two hundred dollars."

This law was designed to aid every poultryman, large and small, to raise poultry free of pullorum infection, which has been a costly disease through the years. The ultimate goal is to attain complete eradication of the disease so that our poultrymen will not have to spend large sums of money each year to test their flocks. Several states have adopted laws to control the spread of pullorum disease and at the 1958 National Plans Conference the delegates voted to request the Federal government to draw up minimum regulations to control the movement of poultry in interstate commerce.



Inspection of Commercial Feedstuffs

by

Feed Control Service Staff

Massachusetts Agricultural Experiment Station

44039, 1958





INSPECTION OF COMMERCIAL FEEDSTUFFS

By Feed Control Service Staff

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INTRODUCTION

The Massachusetts Feed Control Service, as are the feed control services of other states, is called upon to analyze a variety of materials used as feed. Farmers send in samples of home-mixed feed, stale bread, bakery waste, silage hay, etc. These are analyzed, and the results usually reported to the proper College of Agriculture specialists who make recommendations for the most efficient use of such products in the farmer's feeding program.

The above are feeds that do not come under the provisions of the Massachusetts Feed Law.

The procedure is entirely different when requests are received for the analysis of registered commercial feeds.

If there is any question regarding the quality of a registered feed, the amount of guaranteed ingredients present, or suspected toxicity of the feed, an analysis of a sample submitted by the farmer serves no useful purpose. The analytical report on such a sample has no legal status.

In such cases the Feed Control Service's inspector is sent to get an official sample. If sickness of livestock or a sudden drop in production is involved, extensive analyses of feeds are made only at the recommendation of veterinarians or qualified feed nutritionists.

Whenever a lot of feed comes under reasonable suspicion as the cause of trouble, the farmer should set aside at least five unopened bags, with tags intact, for subsequent sampling by the official inspector.

It should be an elementary precaution on the farmer's part to consult a veterinarian or poultry pathologist at the first sign of sickness in his herd or flock. If the feed is suspected, the manufacturer or dealer should make sure that the proper specialist is called promptly. Enough feed should be retained for an official sample even if the remainder of the lot is replaced by a new shipment. The Feed Control Service should be notified immediately if the farmer's suspicion of the feed is confirmed by the disease specialist or nutritionist.

In outlining the above procedure it is taken for granted that the feed manufacturer is aware of his responsibility to his customers, and will cooperate fully with the control official in his effort to establish whether or not the feed is at fault and, if it is, what corrective action should be taken.

Brands Substantially Complying with Guarantees

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Num- ber Ana-
Acme-Evans Co., Inc.		The Beacon Milling Co.	
Acme Wheat Standard Middlings with Screenings.....	1	Auburn "14" Dairy Ration.....	
L. P. Adams Co.		Auburn "16" Dairy Ration Pel-lets ..	
Greylock Brand 16% Dairy Feed....	1	Auburn "20" Dairy Ration.....	
*Greylock Brand Laying Mash.....	2	Beacon Balancer Pellets.....	
Ajax Dog Food Co.		Beacon Breeder All-Mash.....	
Ajax Kibbled Biscuits.....	1	Beacon Dog Meal.....	
Albers Milling Co.		Beacon Breeders Mash.....	
Albers Calf Manna.....	1	Beacon Broiler Finisher.....	
Albers Rabbit Family Ration.....	1	Beacon Calf Grower.....	
Friskies Cubes.....	1	Beacon Calf Starter.....	
Friskies Meal.....	1	Beacon Complete Rabbit Pellets.....	
Allied Mills, Inc.		Beacon Dairy Breeder Pellets.....	
Pork Maker.....	1	Beacon Dairy Fitting.....	
Sugarine 16% Dairy "E".....	1	Beacon "16" Dairy Ration.....	
Wayne All Mash Egg.....	1	Beacon Duck Grower-Finisher.....	
Wayne Calf Starter "A".....	1	Beacon "22" Egg Mash.....	
Wayne 16% Dairy.....	1	Beacon Goat Ration.....	
Wayne 20% Dairy.....	1	Beacon Grower All-Mash.....	
Wayne Dog Food.....	1	Beacon Horse Feed.....	
Wayne Egg.....	1	Beacon Keep Sweet Silage Preservative	
Wayne 26% Egg and Breeder.....	1	Beacon Market Egg All-Mash.....	
Wayne Fitting Ration.....	1	Beacon Pig Grower.....	
Wayne Horse Feed.....	1	Beacon "14" Test Cow Ration.....	
Wayne Rabbit Ration.....	1	Beacon "16" Test Cow Ration.....	
Wayne Tail Curler.....	1	Beacon "15" Test Cow Ration.....	
Wayne Test Cow Ration.....	1	Beacon Turkey & Game Bird Breeder	
Wayne Universal Egg.....	1	Beacon Turkey & Game Bird Fitting.	
Wayne Universal Grower.....	1	Beacon Turkey & Game Bird Grower	
Wayne Universal Turkey Grower....	1	Beacon Turkey Finisher All-Mash ...	
American Crystal Sugar Co.		Beacon "20" Turkey Grower.....	
Dried Beet Pulp with Molasses.....	1	Be-Co Breeder.....	
Plain Dried Beet Pulp.....	1	Be-Co Grower.....	
American Maize-Products Co.		Be-Co Lass.....	
Cream of Corn Gluten Feed.....	1	Be-Co Layer.....	
Archer-Daniels-Midland Co.		Best Feeds & Farm Supply., Inc.	
Archer Quality 34% Protein Linseed		Joy Dog Food.....	
Oil Meal solvent extracted.....	1	Blatchford's Calf Meal Co.	
Archer Quality 44% Protein Solvent		Blatchford's Calfadine.....	
Extracted Soybean Oil Meal.....	1	Blatchford's Calf Meal.....	
32% Protein Fat-Fortified Linseed Oil		Borden Grain Co.	
Meal.....	1	Borden's 14 Fitting.....	
E. R. Bacon Grain Co.		Borden's Poultry Mash 20.....	
Bacon's Corn Gluten Feed.....	1	Borden's Super Mash 16.....	
E. W. Bailey & Co., Inc.		Borden's Super Starter.....	
Bailey's Calf Ration.....	1	Borden's Sweet 16 Dairy.....	
Bailey's Complete Egg Ration.....	1	Corn Meal.....	
Bailey's 16% Dairy Ration.....	1	Boston Molasses Co.	
Barber & Bennett, Inc.		Molasses.....	
Egg-O Laying Mash.....	1	C. W. Brister & Son	
*Fort Orange Dog Food.....	1	Prize Mixed Feed.....	
Fort Orange 12% Fitting & Calf		J. P. Brown Co., Inc.	
Grain Ration.....	1	Brown's Best Baked Kibbled Dog Food	
Fort Orange Golden Test Ration	1	Brown's Best Meal Dog Food.....	
Fort Orange Horse Feed.....	1	Buckeye Cellulose Corp.	
Fort Orange Laying Mash.....	1	Buckeye 44% Solvent Extracted Soy-	
Fort Orange 15% Test Ration.....	1	bean Oil Meal.....	
Battle Creek Dog Food Co.		Canada Linseed Oil Mills, Ltd.	
Miller's Dog Cookies.....	1	Maple Leaf 34% Protein Pure Linseed	
Miller's Dog Meal.....	1	Oil Meal.....	
Miller's Kibbles Dog Food.....	1	Canada Starch Co., Ltd.	
Miller's Nifties for Dogs.....	1	Edwardsbury Corn Gluten Feed.....	
		Cargill, Inc.	
		34% Protein Solvent Extracted Lin-	
		seed Oil Meal.....	

*See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Soya Co., Inc.		F. Diehl & Son, Inc.	
ty-Fifty Soybean Oil Meal.....	1	Dairy.....	1
Feed Co.		Fitting.....	1
ate's Ace High All Sweet Dried		Grower.....	1
Citrus Pulp.....	1	Horse Feed.....	1
Filling Corp.		Laver.....	1
16.....	1	Starter.....	1
Complete Rabbit Pellets.....	1	Dietrich & Gambrill, Inc.	
le Dog Food.....	1	All Mash Breeder Ration.....	1
Dry & Freshening Ration.....	1	All Mash Grower.....	1
Horse Feed.....	1	All Mash Laying Ration.....	1
Life Span 15 Fortified Dairy		All-Purpose Mash.....	1
Ration.....	1	D & G Breeder Mash.....	1
le Market Egg Mash.....	1	D & G Dry Cow Fitting Ration.....	1
Rest Cow 16.....	1	D & G Fleshing Pellets.....	1
Test Cow 18.....	1	D & G Rabbit Feed Pelleted.....	1
Apple Pomace.....	1	D & G Turkey Growing Mash.....	1
England 18 Dairy Ration.....	1	Frederick 16% Dairy.....	1
Cooperative Starch Co.		Frederick Laying Mash.....	2
ar Dried Potato Pulp & Molasses	1	Gambrill's Growing Mash.....	1
Dairy Service, Inc.		Gambrill's Laying Mash.....	1
munity 16% Dairy Ration.....	1	Pen Mar Horse & Stock Feed.....	1
munity 18% Dairy Ration.....	1	Utility Scratch Feed.....	1
munity Fitting Ration.....	1	John C. Dow Co.	
Related Rendering Co.		Crumpled Meal.....	1
enco 47% Meat & Bone Scrap...	7	Crunchy.....	1
Products Refining Co.		Dow's Dog Biscuits.....	1
ond Brand Corn Gluten Meal ..	1	J. L. Dunnell & Son	
Products Sales Co.		*Excel 18% Dairy Ration.....	4
an Complete Dog Food.....	2	*Excel Fitting Ration.....	5
Re & Sons Grain Co.		Excel Laying Mash.....	2
ny's Grow-Lay Mash.....	1	*Horse Feed with Molasses.....	4
Grain & Feed Co.		Starter & Grower—Horner's.....	2
1' Grade A Laying Mash.....	1	E. I. DuPont de Nemours & Co.	
5' Gr wing Mash.....	1	Urea Two-Sixty-Two.....	1
& Starter & Breeder Ration.....	1	Eastern States Farmers' Exchange, Inc.	
Laboratories, Inc.		Calf Starter.....	1
rs Vitamelk Multi-Vitamin		Calving Ration.....	1
ortified.....	1	Champion.....	1
Lee		Class Leader.....	1
nder Complete Laying.....	1	DFE (Drouth Forage Extender).....	1
ign Egg Producer.....	1	Dog Feed.....	1
er Dairy Ration 18.....	1	Fulpaill.....	1
er Dairy Ration 20%.....	1	Milkmore.....	2
ling Process Co.		Milksaver.....	1
b Meal.....	1	Pork Builder.....	1
the Mills, Inc.		Porkmix.....	1
are Complete Layer.....	1	Rabbittes.....	1
are Complete Starter & Grower.....	1	Supmix.....	1
are Dog Food.....	1	Sweepstakes.....	1
are Egg Mash.....	1	Turkey Finisher.....	1
are Fitting Ration.....	1	Turkey-Grower.....	1
are Growing Mash.....	1	Eckhart Milling Co.	
are H-E Grower.....	1	Ecko Pure Wheat Bran.....	1
are H-E Laver.....	1	Elmore Milling Co., Inc.	
are Rabbit Pellets.....	1	Elmore Bulky Base.....	1
are Sweet 16% Dairy Feed....	1	Elmore Bull Feed.....	1
Grain & Soya Products Co.		Elmore Complete Growing Ration....	2
rotein Soybean Oil Meal		Elmore Complete Market Egg Ration	1
olvent Extracted).....	1	Elmore Complete Rabbit Ration Pel-	1
		lets.....	1
		Elmore Dog Food.....	1
		Elmore Dry & Freshening Ration....	1
		*Elmore Egg Mash.....	4
		Elmore Fitting Ration 14%.....	1
		Elmore Flaked Pelleted Calf Starter..	1
		Elmore Fleshing Pellets.....	1

Table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Nur Sal Ana
Elmore Game Bird Grower.....	1	Flory Milling Co.	
Elmore Goat Ration.....	1	*Flory 18% Broiler Finisher.....	
Elmore Grand Champion Ration.....	1	*Flory 16% Hi-Efficiency Grower.....	
*Elmore Growing Mash.....	1	Flory 16% Hi-Efficiency Layer.....	
Elmore Hog Ration.....	1	Flory Horse Feed.....	
Elmore Horse Feed.....	1	Flory 20% Layer.....	
Elmore M.A.C. Laying Mash.....	1	Flory 22% Layer.....	
Elmore Maker-Grow Little Pig Ration.....	1	Flory Rabbit Pellets.....	
*Elmore Milk Grains "Sixteen".....	2	Flory Record 16% Dairy Feed.....	
Elmore Pacemaker 16% Dairy Ration.....	1	Flory Record 14% Fitting Ration.....	
Elmore Poultry & Turkey Fitting Ration.....	1	Flory Superior 16% Dairy Feed.....	
Elmore Test Ration 16%.....	1	Flory Superior 14% Fitting Ration.....	
Elmore Test Ration 18%.....	1	Flory Turkey & Poultry Fitting Feed.....	
Elmore Turkey Finisher (Fattener) ...	1	FMC 16% Dairy (Open Formula) ...	
		Wheat Standard Middlings.....	
John W. Eshelman		Fred A. Fountain	
Lancaster 16 Dairy Feed.....	1	Fountain's Complete Growing Mash ..	
Pennsy 16 Dairy Feed.....	1	Fountain's Growing Mash.....	
Pennsy Laying Mash.....	1	Fountain's Laying Mash.....	
Red Rose Breeder Mash.....	1		
Red Rose Calf Grower.....	1	Fruit Industries	
Red Rose Calf Starter.....	1	Tropicana's Sweetest Dried Citrus Pulp.....	
Red Rose Complete Laying Ration... ..	1		
Red Rose 16 Dairy Feed.....	1	General Foods Corp.	
Red Rose Dog & Puppy Food.....	1	Burt's Hominy Feed.....	
Red Rose Fitting Ration.....	1	Gaines Dog Biscuits.....	
Red Rose Hog Meal.....	1	Gaines Dog Biscuit Bits.....	
Red Rose Horse Feed.....	1	Gaines Homogenized Dog Meal.....	
Red Rose Laying Mash.....	1	Gaines Krunchon Cubes.....	
Red Rose Poultry Booster Pellets.....	1		
Red Rose Rabbit Pellets.....	1		
Essex County Cooperative Farming Assn.		General Mills, Inc.	
S-X All-Mash Breeder.....	1	Ben Hur Wheat Standard Middlings & Ground Wheat Screenings Not Exceeding Mill Run.....	
S-X All-Mash Grow-Egg.....	1	General Mills 44% Protein Solvent (Hexane) Extracted Soybean Oil Meal.....	
S-X Breeder Mash.....	1	Gold Medal Layer Mash.....	
S-X 18% Dairy Ration.....	1	Gold Medal Stock Champ.....	
S-X 14% Fitting Ration.....	1	Gold Medal 16% Super Dairy Feed... ..	
S-X Grow-Egg Mash.....	1	Gold Medal 20% Super Dairy Feed.....	
S-X Starter & Broiler, Connecticut Formula.....	1	Washburn Gold Medal Wheat Brand & Ground Wheat Screenings Not Exceeding Mill Run.....	
Farm Bureau Association		General Mills, Inc., Larowe Region	
Breeder Mash.....	2	Larowe Poultry Surechatch Complete H-E.....	
22% Breeder Mash.....	2	Larowe Surebroiler Finisher 23-X....	
Calf Grower.....	2	Larowe Surecalf.....	
*Chick Starter Mash.....	1	Larowe Surecattle 32.....	
Complete Breeder Mash.....	1	Larowe Surechamp.....	
*Complete Developer Mash.....	1	Larowe Surelay 38.....	
*Complete Market Egg Mash.....	1	Larowe Surelay "M-E".....	
Dairy 20%.....	2	Larowe Surelay Complete H-E.....	
16% Dairy Ration.....	2	Larowe Suremilk 14.....	
14% Dairy Ration "Fine".....	1	Larowe Suremilk 16.....	
16% Dairy Ration "Fine".....	2	Larowe Suremilk 20.....	
32% Dairy Supplement.....	1	Larowe Suremilk 32.....	
Developer Mash.....	2	Larowe Surelamb.....	
Finisher Mash.....	1	Larowe Sureturk.....	
Fitting Ration.....	1		
Hog Feed.....	1	Gloucester By-Products, Inc.	
Horse Feed.....	2	Globpro Brand 60% Protein Fish Meal	
Market Egg Mash.....	2		
Maternity Ration.....	2	Roy Goff & Co., Inc.	
14% Milking Ration.....	2	Goff Hi Protein Dog Meal.....	
Rabbit Food Pellets.....	2		
Turkey Breeder Mash.....	1	Gorton's of Gloucester, Inc.	
Turkey Grower.....	2	Gorton's Redfish Meal.....	
Whole Grain Scratch.....	1		
Farmers Feed Co.			
Browers Dried Corn.....	1		

*See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees --(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Grandin Milling Co.		House of Huston, Inc.	
Golden Harvest 14% Fatting Ration	1	Trick Stick Dog Treat	1
Golden Brand Mash Feed	1		
Golden's Bull Feed	1	The Hubinger Co.	
Golden's Complete Growing	1	Kookak 21% Protein Corn Gluten Feed	1
Golden's 14% Fatting Ration	1		
Golden's Horse Feed	1	Humphreys-Codwin Co.	
Golden's 16 Milk Maker	1	Dixie Brand Cottonseed Meal 41%	1
Golden's Succulent Feed	1		
Golden's 16 Test Ration	2	Independent Tallow Co.	
Golden's 18 Test Ration	1	Eggaday Brand 47% Protein Meat & Bone Scrap	1
Goldenized Golden Harvest 18%	1		
Great Atlantic & Pacific Tea Co.		International Milling Co.	
Great Bone Shaped Dog Biscuit	1	Blackhawk Wheat Bran with Ground Mixed Screenings Not Ex- ceeding 8%	1
Great Dog Meal	1	Blackhawk Wheat Standard Middlings with Ground Mixed Screenings Not Exceeding Mill Run	1
Great Dog Laying Mash	1	Target Wheat Red Dog	1
Great Filled Biscuit Dog Food	1		
Great Western Sugar Co.		Jaquith & Co., Inc.	
Great Beet Pulp	1	Growing Mash	1
		Jaquith 20% Dairy Ration	1
Great Hunter Co.		Jaquith 16% Complete Layer Mash	1
Great Dog Food Meal	1	Jaquith High Efficiency Laying Mash	1
Great Bull Feed	1	Jaquith High Efficiency Starter Mash	1
Great Calf Starter	1	Jaquith Horse Feed	1
Great Dairy Fitting Pellets 14%	1	Jaquith Laying Mash	1
Great Dairy Production 16%	1	Swine Growing & Fattening Feed	1
Great Dairy Production 18%	1		
Great Dog & Poultry Mash	1	Kasco Mills	
Great Horse Feed	1	Kasco Complete Dog Food	1
Great Pelleted Flaked 15 Dairy	1		
Great Pelleted Flaked 18 Dairy	1	Kellogg Co.	
Great Sup-Pel Pellets	1	Great Pup T Bone Dog Biscuits	2
Great Comb A Mash Layer	1	Kellogg's Mink Ration	1
Great Comb C. Flakes	2		
Great Comb Egg & Grower Concentrate	1	Kellogg Sales Co.	
Great Comb Egg Mash	1	Kellogg's Hominy Feed	5
Great Comb Turkey Finisher	1		
Great Comb Turkey Grower	1	Kennel Food Supply	
		K.F.S. Cero Meato Brand Dog Food	1
Heck & Sons			
Heck's	1	Julius Kessler Distributing Co., Inc.	
Heck's Dairy Ration	1	Kessler Corn Distillers Dried Grains	1
Heck's Dairy Feed	2		
Heck's Growing Mash	1	Kronick's Coal & Grain Co.	
Heck's Starter & Broiler Mash	1	Kronick's Dairy Ration 16%	1
		Kronick's Egg Mash	1
Feed Mills, Inc.			
Feed Pasture Coarse 16% Dairy Feed	1	Kuder Pulp Sales Co.	
Feed 16% Dairy Feed	1	Kuder's Dried Corn Pulp	1
Feed 16% Dairy Feed with Pellets	1		
Feed Hi-Energy Complete Laying Ration	5	Lauhoff Grain Co.	
Feed Laying Mash	1	Lauhoff Toasted Corn Flakes	1
Feed Milk Replacer for Young Calves	1	Vermilion Hominy Feed	1
Mountain Products Corp.		Libner Grain Co.	
Mountain	1	Libner's Dog Food	1
Food & Sons		Lockwood Nutrition Service, Inc.	
Food Calf Starter	1	Molson's Brewers Dried Grains	1
Food Citrus Pulp	5		
Food Sterilized Skim Milk	2		
W. L. Hopsins, Inc.			
White State Complete Mash	1		
White State Dog Food	1		
White State Hay Saver	1		
White State Stock Feed	1		

Table of "Brands Not Conforming to Guarantees"

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Num Sam Anal
Mansfield Milling Co.		Jas. F. Morse Co.	
Full Cry Dog Meal.....	1	Morse's 45% Meat & Bone Scraps...	
Money's Worth Dairy Feed 16%.....	1	Mowat Wilson & Co.	
*Money's Worth Fitting Ration.....	3	Dried Beet Pulp.....	
Money's Worth Growing Mash.....	1	National Biscuit Co.	
Money's Worth High Efficiency Com- plete Breeder.....	1	Milk Bone Dog Biscuits.....	
Money's Worth High Efficiency Com- plete Growing.....	1	Pal Tiny Bits.....	
Money's Worth High Efficiency Com- plete Mash.....	1	National Distillers Products Co.	
Money's Worth Rabbit Pellets.....	1	Nadrisol Corn Distillers Dried Solubles	
Money's Worth Turkey Fattener.....	1	The New Century Co.	
Money's Worth Turkey Growing.....	1	*Century Brewers Dried Grains.....	
Maritime Milling Co., Inc.		Northern Ohio Sugar Co.	
B-B Calf Grower.....	1	G. W. Dried Beet Pulp.....	
B-B Complete Laying Ration.....	1	Ogden Grain Co.	
B-B Complete Rabbit Feed.....	1	Ogden Complete Layer.....	
B-B "16" Dairy Ration.....	1	Ogden Complete Starter Grower	
B-B Dry & Fresh Cow Fitting Ration	1	Layer Breeder.....	
B-B Fitting Ration.....	1	Ogden 16% Dairy Ration.....	
B-B Pig & Hog Feed.....	1	Ogden Fitting Ration.....	
Ma-Co Complete Growing Ration....	1	Ogden Morse Feed.....	
Ma-Co Complete Laying Ration.....	2	Ogden Laying Mash.....	
Ma-Co Egg Mash.....	1	Ogden Rabbit Pellets.....	
Marmico Dairy Feed.....	1	Ogden 14% S-M-R Ration.....	
Marvin Grain Co.		Ogden "16" Special.....	
Marvin Dog Meal.....	1	Ogden Super Pig Ration.....	
Merrimack Farmers' Exchange, Inc.		Ogden Turkey Grower & Developer..	
Merrimack All Mash.....	1	Orleans Candy Co.	
Merrimack 16% Dairy Ration.....	1	Lolli-Pups.....	
Merrimack 14% Fitting Ration.....	1	The Park & Pollard Co.	
Merrimack Hi-F Grower-Layer.....	1	Green Acres 14%.....	
Merrimack Hominy Feed.....	1	Hi-Prime Complete Turkey Finisher..	
Merrimack Stock Feed 52.....	1	Lay or Bust All Mash Grower.....	
Merrimack White Mountain Dairy....	2	Lay or Bust All Mash Layer.....	
Sweetened Oat Mill By-Product.....	1	Lay or Bust Egg Mash.....	
Minnesota Linseed Oil Co.		Lay or Bust Growing Feed.....	
34% Solvent Extracted Linseed Oil		Lay or Bust Hi-Valu Pellets.....	
Meal.....	1	Milk Maid Calf Starter.....	
Minute Maid Corp.		Milk Maid 16% Dairy Ration.....	
Golden Isle Citrus Pulp.....	1	Milk Maid 20% Dairy Ration.....	
Geo. Q. Moon & Co., Inc.		Milk Maid Dri-Fresh Ration.....	
Crimped Oats.....	1	Milk Maid Fitting Ration.....	
Moon Bulky Cow Feed.....	1	Milk Maid Sheep & Goat Feed.....	
Moon Complete Growing Mash.....	1	Milk Maid 18% Test Ration.....	
Moon Complete Laying Mash.....	3	Park & Pollard Complete Layer.....	
Moon Dairy Fitting Ration Fortified	1	Park & Pollard Go-Tu-It Pig Grower	
Moon 16% Dairy Ration.....	1	Park & Pollard Hi-Speed Horse Feed	
Moon 18% Dairy Ration.....	2	Park & Pollard Rabbit Pellets.....	
*Moon 20% Dairy Ration.....	1	Red Ribbon 20% Dairy Ration.....	
Moon Dog Food.....	1	Geo. M. Parker Grain Co.	
Moon Growing Mash.....	1	Bill McHugh's Horse Feed.....	
Moon Hi-Energy Complete Breeder		Parker's High A 14% Fitting Ration..	
Mash.....	1	Parker's Laying-Breeding Mash.....	
Moon Hog Feed.....	1	Parrish & Heimbecker Ltd.	
Moon Morse Feed.....	1	"Parrheim" Pure Wheat Bran.....	
Moon Laying Mash.....	1	"Parrheim" Pure Wheat Shorts.....	
Moon N.E. Complete Growing Mash..	1	Pasco Packing Co.	
Moon 14% Pasture Aid Dairy.....	2	Sugar Sweet Citrus Pulp.....	
Moon Rabbit Pellets.....	1	Patent Cereals Co.	
Moon Super Laying Mash.....	1	Hominy Feed.....	
Moon 16% Test Ration.....	2	Pillsbury of Canada, Ltd.	
Moon 18% Test Ration.....	1	Dandy Wheat Bran.....	
Moon U.S. 16% Dairy Ration.....	1		
32% Supplement Ration.....	1		

*See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Bury Mills, Inc.		Red & White Corp.	
Blue Star No. 1 Wheat	1	Kenilworth Dog Food Kibbled Ration	1
C. Pratt & Co., Ltd.		Jas. Richardson & Sons, Ltd.	
Golden Brand Pure Wheat Bran	1	Canadian Pure Wheat Bran	1
Miller Oats Co.		D. F. Riley	
Yellow Oats Wheat Bran	1	*Riley's 16% Dairy Ration	1
Yellow Oats Wheat Bran	1	Riley's 18% Laying Mash	1
ul-O-Pep Calf Starter	1	Rudhard Products, Inc.	
ul-O-Pep Egg Breeder Ration	1	Rudhard Baked Fish Balls Brand	1
ul-O-Pep Fitting Feed	1	Rudhard Baked Meat Balls Brand	1
ul-O-Pep Growing Mash	1	Russell-Miller Milling Co.	
ul-O-Pep Laying Mash	1	Occident Wheat Bran	1
ul-O-Pep Laying Mash	1	Occident Wheat Mixed Feed	1
ul-O-Pep No. 1 Super Ration	1	Occident Wheat Red Dog	1
ul-O-Pep Super Greens Pellets	1	Occident Wheat Standard Middlings	2
ul-O-Pep Test Cow Feed	1	The Ryther & Warren Co.	
Per L. J. J. J.	1	Blue Tag Dairy Ration	1
Black Kernal Meal	1	Salada-Shirriff-Morsey, Inc.	
White Hominy Feed	1	Horsely Brand Dried Citrus Pulp	2
ton Purina Co.		Jos Schlitz Brewing Co.	
EXCEL S. S. S. S. S.	1	Schlitz Purity Brewers Dried Grains	1
1% Protein Solvent Extracted		Allen V. Smith, Inc.	
Soybean Oil Meal	1	Smith's Barley Feed	1
arina B & M Cow Chow D.	1	Harold E. Smith Co.	
arina Breeder Layena (Complete		Norco Complete Laying	1
Ration) E.	2	Special Mix 20%	1
arina Breeder Layena	1	J. M. Smith Grain, Inc.	
arina Cage Layena E.	1	Smith's All Mash Growing & Laying	1
arina Chick Growing Chow (E)	1	Smith's 16% Dairy Feed	1
arina Cow Chow D 14%	1	Smith's High-Energy Breeder Mash	1
arina Cow Chow D 16%	1	Southern Fruit Distributors, Inc.	
arina Cow Chow D 20%	1	Bluebird Citrus Pulp	1
arina D & F Chow	1	Spratt's, Inc.	
arina Dog Chow	1	Spratt's Assorted Products	1
arina Dog Chow Checkers	1	A. E. Staley Mfg. Co.	
arina Egg Chow E.	1	Arcady Complete Rabbit Pellets	1
arina Eggena E.	1	Arcady Wonderfat Dog Food	1
arina Fitting Ration	1	Arcady Wonderfat Station Feed	1
arina Fox Chow	1	Arcady Wonderfat Station Feed	1
arina Game Bird Growena E.	1	Pellets	1
arina Goat Chow E.	1	Rockland Guinea Pig Diet	1
arina Hen Chow D.	1	Rockland Mouse Diet	1
arina Lay Chow E.	1	Rockland Rabbit Ration	1
arina Layena (Complete Ration) E.	2	Rockland Rat Diet	1
arina Milk Chow D 16%	1	Staley's 21% Corn Gluten Feed	1
arina Milk Chow D 20%	1	Staley's 44% Protein Solvent	1
arina Mink Chow	1	Extracted Soybean Oil Meal	1
arina Nuptone Chow	1	Standard Brands, Inc.	
arina Omolene	1	Walter Kendall Hunt Club Burgerbits	1
arina Poultry Chow Checkers E.	1	Dog Meal	1
arina Poultry Booster Chow E.	1	Walter Kendall Hunt Club Dog	1
arina Poultry Chow E.	1	Biscuit	1
arina Rabbit Chow Checkers 20%	1	Walter Kendall Hunt Club Full Diet	1
arina Rabbit Chow Checkers	1	Dog Meal	1
Complete Ration E.	1	Walter Kendall Hunt Club Homoge-	1
arina Range Checkers	1	nized Dog Meal	1
arina Super Cage Layena E.	1	Walter Kendall Hunt Club Kennel	1
Complete Ration	1	Pack Dog Biscuit	1
arina Super Layena (Complete		Walter Kendall Hunt Club Kibbled	1
Ration)	1	Dog Food	1
arina Turkey Fatena E.	1	Reardon & Sons	
arina Turkey Growena E.	1	Register Brand Fish Meal	1
Reardon & Sons		Register Brand 45% Protein Meal	1
Register Brand Fish Meal	1	& Bone Scrap	1
Register Brand 45% Protein Meal	1	Gold Farm, Inc.	
& Bone Scrap	1	Goldbird Super Boiler Mash	1

See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number Sample Analyza
Sturdy Dog Food Co.		Made Right 20% Dairy.....	1
Sturdy Dog Food.....	1	Made Right Growing Feed.....	2
Sturdy Kibbled Ration.....	1	Made Right High Energy Breeder Mash.....	1
Suni Citrus Products Co.		Made Right High Energy Broiler.....	2
Sweet Suni Citrus Pulp.....	1	Made Right High Energy Grower Mash.....	1
Sunshine Biscuits, Inc.		Made Right High Energy Layer Mash	1
Austin's Kibbled Baked Dog Food...	2	Made Right Horse Feed.....	1
Swansea Grain Co.		Made Right Laying Mash.....	1
Swansea Quality All Mash Grower...	2	*Made Right Pig Feed.....	1
Swansea Quality All Mash Layer.....	1	Made Right Stock Feed.....	1
Swansea Quality Growing Mash.....	1	H. K. Webster Co.	
Swansea Quality Laying Mash.....	1	Blue Seal All-Mash Breeder's Ration..	1
Swansea Quality Turkey Grower.....	1	Blue Seal All-Mash Egg Ration.....	1
Swift & Co.		Blue Seal All-Mash Grow & Lay.....	2
Swift's 50% Soybean Oil Meal.....	1	Blue Seal All-Mash Growing Ration..	1
The T. H. Taylor Co., Ltd.		Blue Seal Calf Starter.....	2
E. J. Cherry's Wheat Bran.....	1	Blue Seal Coarse 16 Dairy Ration....	1
United Cooperative Farmers, Inc.		Blue Seal Coarse 20 Dairy Ration....	1
UCF Calf Starter.....	1	Blue Seal "32" Dairy Concentrate..	1
UCF 16% Dairy.....	1	Blue Seal Egg Mash.....	1
UCF 18% Dairy.....	1	Blue Seal Fat & Finish Ration.....	1
UCF 20% Dairy.....	1	Blue Seal Fitting Ration.....	1
UCF Dry & Freshening Ration.....	1	Blue Seal Flaked 15.....	1
UCF Fitting Ration.....	1	Blue Seal Growing Mash.....	1
UCF Grower.....	1	Blue Seal Horse Feed.....	1
UCF Hi NRG All Mash Grower & Layer.....	1	Blue Seal Pig Feed.....	1
UCF Horse Feed.....	1	Blue Seal Poultry & Turkey Fitting..	1
UCF Layer.....	1	Blue Seal Rabbit Pellets.....	1
UCF Mix Feed.....	1	Blue Seal Standard 14 Dry Cow Fitting Ration.....	1
UCF Pig & Hog Feed.....	1	Blue Seal Standard 16 Dairy Ration..	1
UCF Stock Feed.....	1	Blue Seal Standard 20 Dairy Ration..	1
UCF Super Starter.....	1	Blue Seal Succulent Feed & Calving Ration.....	1
Unity Feeds, Inc.		Blue Seal Super Breeder's Mash.....	1
Unity Breeder Mash.....	1	Blue Seal Test Ration.....	1
Unity Complete Rabbit Pellets.....	1	Blue Seal Turkey Growing.....	1
Unity Dairy & Fitting Ration.....	1	Whitmoyer Laboratories, Ltd.	
Unity 16% Dairy Ration.....	1	*Whitmoyer Quality 56% Fish Meal..	1
Unity High Energy Growing & Laying Mash.....	1	Wilson's Corn Products, Inc.	
Unity Horse Feed.....	1	Wilson Hominy Feed.....	1
Unity Pig & Hog Ration.....	1	Wirthmore Feeds, Inc.	
Unity Turkey & Game Bird Growing Mash.....	1	Big W 16% Dairy Feed.....	1
Unity Turkey Finishing Pellets.....	1	Wirthmore Breeder Mash.....	1
Ventura Grain Co.		Wirthmore Calf Starter Meal.....	1
Every Day 16% Dairy.....	1	Wirthmore Calving Feed.....	1
Every Day 16% Dairy Pelleted.....	1	Wirthmore Chick Starter.....	1
Every Day Fitting Ration.....	1	Wirthmore Coarse Test Dairy Feed..	1
Every Day HiEnergy All Mash Layer	1	Wirthmore Complete Breeder Ration..	1
Every Day Layer-Breeder Mash.....	1	Wirthmore Complete Egg Ration.....	1
C. P. Washburn Co.		Wirthmore Complete Growing Ration	1
Made Right Breeder.....	1	Wirthmore Complete Turkey Breeder Ration.....	1
Made Right Complete Growing Feed..	1	Wirthmore Complete Turkey Fat- tening Ration.....	1
Made Right Complete Layer.....	1	Wirthmore Complete Turkey Grow- ing Ration.....	1
Made Right 16% Dairy.....	1	Wirthmore 20 Dairy Feed.....	1
		Wirthmore 14 Dairy Fitting Feed.....	1
		*Wirthmore 36% Dairy Mixing Feed..	3
		Wirthmore 16 Dairy Ration.....	1
		Wirthmore 16 Dairy Record Feed.....	1
		Wirthmore 18 Dairy Record Feed.....	1
		Wirthmore 32 Dairy Supplement.....	1

*See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Wirthmore Feeds, Inc.—(Continued)		Wirthmore Poultry Fitting.....	1
Wirthmore Dog Food Meal.....	1	Wirthmore Production Scratch.....	1
Wirthmore Fattening Pellets.....	1	Wirthmore Rabbit Pellets.....	1
Wirthmore Fodder C. rations.....	1	Wirthmore Sheep & Goat Feed.....	2
Wirthmore Green Mountain 14.....	1	Wirthmore Stock Feed.....	1
Wirthmore Green Mountain 16.....	1	Wirthmore Super Pellets.....	1
Wirthmore Green Mountain 20.....	1	*Wirthmore Turkey Growing Ration.....	1
Wirthmore Grow & Egg Mash.....	1	Wirthmore Twin-Mix Calf Feed.....	1
Wirthmore Growing Scratch.....	1		
Wirthmore Hi-D-Trol.....	1	Wirthmore Grain Co.	
Wirthmore Hi-Ener-G-16.....	1	Bliss Dairy Ration.....	1
Wirthmore Hi-Ener-G Breeder.....	1	Preferred Complete Growing Mash.....	1
Wirthmore Hog Grower.....	1	Preferred Complete Laying Ration.....	1
Wirthmore Horse Feed.....	1	Preferred 16% Dairy.....	1
Wirthmore Improved Hi-Ener-G		Preferred 18% Dairy.....	1
Starter & Breeder Ration.....	1	Preferred Growing Mash.....	1
Wirthmore Kibbled Dog Biscuit.....	1	Preferred High Energy Grower.....	1
Wirthmore Meatless Mink.....	1	Preferred High Energy Layer.....	1
Wirthmore Mink Food.....	1	Preferred Laying Mash.....	1
Wirthmore Pig & Sow Feed.....	1	Wood's Stock Feed.....	1

*See also table of "Brands Not Conforming to Guarantees."

Brands Not Conforming to Guarantees

This table includes brands that are one percent or more under guarantee in protein or fat or are one and one-half percent or more over guarantee in fiber.

Manufacturer and Brand	Protein		Fat		Fib	
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed
L. P. Adams Co.	%	%	%	%	%	%
* Greylock Brand Laying Mash.....	20.7	20.	4.2	4.	8.0	—
Allied Mills, Inc.						
Wayne Rocket Broiler Starter (185) Medicated.....	24.4	23.	3.9	5.	2.3	—
Barber & Bennett, Inc.						
* Fort Orange Dog Food.....	29.4	26.	4.6	6.	—	—
Buckeye Cellulose Corp.						
Buckeye 41.00% Protein Cottonseed Meal Prime Quality.....	39.6	41.	—	—	—	—
Clyde Milling Corp.						
Clyde H-E Broiler Ration Medicated..	20.4	21.5	4.5	4.5	—	—
Clyde Medicated Hi-Cal-Re Complete Layer & Grower.....	18.1	16.5	4.0	4.	5.8	—
Clyde Hi-Cal-Re Complete Layer & Grower.....	17.0	16.5	4.2	4.	7.0	—
*Clyde Dog Food.....	22.2	25.	7.7	7.	6.1	—
Clyde Dog Food.....	23.9	25.	7.9	7.	5.9	—
*Clyde Market Egg Mash.....	17.2	20.	—	—	4.8	—
Consolidated Rendering Co.						
*Corenco Meat & Bone Scrap 47%.....	45.5	47.	7.0	6.	—	—
Dean & Lee						
Pilgrim Growing Mash.....	20.9	17.	—	—	7.3	—
Delaware Mills, Inc.						
Delaware Horse Feed.....	10.5	12.	—	—	4.	—
Dow Brewery, Ltd.						
Dried Brewers' Grains.....	21.4	22.	5.6	7.	—	—
Dried Brewers' Grains.....	19.1	22.	5.2	7.	17.0	—
J. L. Dunnell & Son						
*Horse Feed with Molasses.....	9.3	11.	—	—	8.4	—
*Excel 18% Dairy Ration.....	16.8	18.	4.5	4.5	8.4	—
*Excel 18% Dairy Ration.....	16.6	18.	3.9	4.5	7.9	—
*Excel 18% Dairy Ration.....	16.5	18.	4.3	4.5	—	—
*Excel Fitting Ration.....	14.0	14.	3.9	5.	7.7	—
2 in 1 Pet Products, Inc.						
Dog Crunchies.....	34.6	32.	4.6	6.	—	—
Elmore Milling Co., Inc.						
Elmore Broiler Finisher Pellets (1N)..	16.8	18.	3.0	4.5	3.7	—
*Elmore Egg Mash.....	17.3	22.	—	—	—	—
*Elmore Egg Mash.....	17.6	22.	4.3	4.	4.5	—
*Elmore Egg Mash.....	16.8	22.	4.9	4.	4.7	—
*Elmore Egg Mash.....	17.5	22.	5.0	4.	4.8	—
*Elmore Growing Mash.....	16.8	18.	—	—	6.0	—
*Elmore Milk Grains 'Sixteen'.....	14.7	16.	—	—	8.0	—
Farm Bureau Ass'n.						
*Chick Starter Mash.....	18.8	20.	5.1	4.5	4.9	—
*Complete Developer Mash.....	16.3	16.	3.3	4.5	4.5	—
*Complete Market Egg Mash.....	16.6	16.	3.2	4.5	4.5	—
Turkey Starter.....	26.3	28.	5.1	4.	4.4	—
Flory Milling Co.						
*Flory 18% Broiler Finisher.....	16.6	18.	4.2	6.	3.2	—
*Flory 18% Broiler Finisher.....	17.5	18.	4.7	6.	3.5	—
Flory 16% Hi-Efficiency Grower.....	14.6	16.	4.0	4.	4.3	—
General Mills, Inc.						
Larro Poultry Surelift Medicated.....	25.2	27.5	6.1	5.5	—	—

*See also table of "Brands Substantially Complying with Guarantees."

Brands Not Conforming to Guarantees—Continued

This table includes brands that are one percent or more under guarantee in protein or fat or are one and one-half percent or more over guarantee in fiber.

Manufacturer and Brand	Protein		Fat		Fiber	
	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed
	%	%	%	%	%	%
H. & Co., Inc. Laying Mash	21.3	20.	2.8	4.	6.7	7.5
Field Milling Co. Wey's Worth Dairy Feed 20%.....	20.3	20.	2.8	4.	9.3	9.5
Wey's Worth Dairy Feed 20%.....	20.0	20.	3.0	4.	7.8	9.5
Wey's Worth Dairy Feed 20%.....	20.0	20.	2.7	4.	9.1	9.5
Wey's Worth Fattener & Finisher.....	15.3	17.	—	—	—	—
Wey's Worth Laying Mash.....	13.0	14.	3.0	4.5	9.3	10.
Wey's Worth Laying Mash.....	18.9	20.	—	—	6.6	4.
Wey's Worth Laying Mash.....	21.8	20.	3.4	4.5	—	—
J. Moon & Co., Inc. Wey's 20% Dairy Ration...	19.0	20.	3.8	4.	—	—
Wey's Dairy Fitting Ration.....	16.8	14.	3.0	4.	—	—
J. Morse & Co. Wey's 47% Meat & Bone Meal	47.2	47.	6.5	8.	—	—
New Century Co. Century Brewers' Dried Grains...	22.4	26.	4.6	5.	16.5	18.
Grain Co. Wey's Hi-Energy Starter & Broiler Medicated	21.0	22.	6.7	4.5	3.9	4.
& Pollard Co., Inc. Wey's 10% Broiler T.N.T.	20.5	22.	—	—	3.0	3.
Wey's Brand, Inc. Wey's 10% Broiler T.N.T.	30.3	19.	3.4	7.	—	—
Quaker Oats Co. Quaker Sugared Schumacher Feed.	11.0	12.	—	—	—	—
Wey's 16% Dairy Ration.....	16.3	16.	3.5	4.5	8.3	10.
Staley Mfg. Co. Oakland Monkey Diet...	27.2	27.	3.6	5.	—	—
Feeds, Inc. Wey's Laying & Laying Mash.	18.9	20.	—	—	4.	6.
Wey's Grain Co. Wey's 10% Broiler T.N.T.	31.6	26.	4.1	6.	—	—
Wey's Grain Co. Wey's 10% Broiler T.N.T.	23.5	20.	2.9	4.	7.0	7.
Walker & Sons Wey's Stimulav Corn Distillers' Dried Solubles.....	23.4	25.	15.3	5.	—	—
Wey's Stimulav Corn Distillers' Dried Solubles.....	23.5	25.	14.4	5.	1.7	2.
Washburn Co. Wey's de Right Pig Feed.	17.0	16.	—	—	10.5	8.
Weyer Laboratories, Ltd. Wey's Quality 56% Fish Meal.....	54.2	56.	7.5	5.	—	—
Wey's Feeds, Inc. Wey's Broiler Finisher 422.....	25.7	23.	5.6	8.	2.4	3.5
Wey's Broiler Finisher 422.....	19.0	23.	9.4	8.	3.5	3.5
Wey's 36% Dairy Mixing Feed.....	34.4	36.	14.3	2.5	—	—
Wey's 36% Dairy Mixing Feed.....	30.5	36.	—	—	8.4	9.
Wey's 36% Dairy Mixing Feed.....	32.5	36.	—	—	8.3	9.
Wey's 36% Dairy Mixing Feed.....	33.7	36.	—	—	—	—
Wey's Turkey Growing Ration.....	21.5	23.	—	—	—	—

*See also table of "Brands Substantially Complying with Guarantees."

Feeds Containing Drugs

Manufacturer and Brand	Drug	Found	Guarant
Allied Mills, Inc.			
Wayne Chick Starter (133).....	{ 3-Nitro ¹ Nicarbazin ²	.0031% .0111%	.0025% .01%
Wayne Fattening Pellets (161).....	3-Nitro	.005%	.005%
Wayne Medicated Stress Diet (176).....	{ Chlortetracycline ³ Oxytetracycline ⁴ Furazolidone	.025g/ .025g/ .011%	.025g/ .025g/ .011%
Wayne Rocket Broiler Finisher (196).....	{ 3-Nitro Nicarbazin	.0057% .010%	.005% .01%
Wayne Rocket Broiler Starter (186).....	{ 3-Nitro Nicarbazin	.005% .0073%	.005% .01%
Wayne Rocket Broiler Starter (186).....	{ 3-Nitro Nicarbazin	.0055% .010%	.005% .01%
Wayne Rocket Broiler Starter (186) A.....	{ 3-Nitro Nicarbazin	.005% .01%	.005% .01%
Wayne Universal Turkey Grower (236).....	4-Nitro ⁵	.029%	.025%
The Beacon Milling Co.			
Beacon C-C Pellets.....	Sulphur	5.0%	5.0%
Beacon Broiler Finisher.....	{ Nicarbazin Arsanilic Acid Chlortetracycline	.01% .0094% .057g/lb	.01% .009% .05g/lb
Beacon Broiler Finisher.....	{ Nicarbazin Arsanilic Acid Chlortetracycline	.010% .009% .12g/lb	.01% .009% .1g/lb
Beacon Chlortetracycline Mix.....	{ Chlortetracycline Furazolidone	.058g/lb .0086%	.05g/lb .011%
Beacon Chlortetracycline & Furazolidone Mix.....	{ Furazolidone Nicarbazin	.01% .01%	.01% .01%
Beacon Complete Starter.....	Sodium Propionate	2.5%	2.5%
Beacon Dairy Fitting Ration.....	Nicarbazin	.0100%	.01%
Beacon Grower All-Mash.....	Nicarbazin	.0059% ⁷	.0125
Beacon Poultry Gro-Finisher.....	{ Dienestrol Diacetate	.007% .01%	.007% .01%
Beacon Poultry Finisher.....	{ Nicarbazin Chlortetracycline	.07g/lb .010%	.05g/lb .01%
Beacon Starter-Broiler.....	{ Nicarbazin Arsanilic Acid Nicarbazin	.010% .010% .010%	.009% .01% .009%
Beacon Starter-Broiler.....	{ Nicarbazin Arsanilic Acid Sulfathiazole	.011% .107% .025%	.01% .025% .025%
Beacon S. O. Control Mash Base.....	4-Nitro	3.4%	3.0%
Beacon Turkey Finisher All-Mash.....	Sulfur	.016%	.025%
Beacon Turkey & Game Bird Flushing Mash.....	4-Nitro	.050%	.05%
Beacon "20" Turkey Grower.....	Nitrothiazole ⁸	.023%	.0175
Beacon "20" Turkey Grower.....	{ Sulfathiazole Arsanilic Acid	.018% .07%	.009% .07%
Beacon Turkey Starter.....	{ Nicotine Phenothiazine	.23% ⁷ .073%	.50% .07%
Beacon Worm Mash.....	{ Nicotine Phenothiazine	.50% .0076%	.50% .01%
Beacon Worm Mash.....	Nicarbazin	.0076%	.01%
Be-Co Grower.....			
Clyde Milling Corp.			
Clyde H-E Broiler Mash.....	{ Nicarbazin Arsanilic Acid	.0032% .0055%	.01% .009%
Clyde H-E Broiler Mash.....	{ Nicarbazin Arsanilic Acid	.0109% .0143%	.01% .009%
Clyde H-E Broiler Ration.....	{ Nicarbazin Arsanilic Acid	.0130% .0560%	.01% .009%
Clyde Hi-Cal-Re Complete Grower Mash.....	Nicarbazin	.01%	.01%
Clyde Hi-Cal-Re Complete Grower Mash.....	Nicarbazin	.0049% ⁷	.01%
Clyde Hi-Cal-Re Complete Layer & Grower.....	Bacitracin	.060g/lb	.038g/lb
Clyde Hi-Cal-Re Complete Layer & Grower.....	Procaine penicilline	.012g/lb	.012g/lb
Clyde Hi-Cal-Re Complete Layer & Grower.....	Procaine penicilline	.010g/lb	.014g/lb
Clyde Hi-Level Mash.....	{ Bacitracin Chlortetracycline	.036g/lb .08g/lb	.036g/lb .03g/lb
Clyde Meat Bird Finisher Pellets.....	{ Nicarbazin Arsanilic Acid	.01% .011%	.01% .009%

¹ 3-Nitro 4-Hydroxyphenylarsonic Acid² Nicarbazin (4,4'-Dinitrocarbanilide 2-Hydroxy-4,6-dimethylpyrimidine)³ Chlortetracycline Hydrochloride⁴ Chlortetracycline hydrochloride and oxytetracycline hydrochloride were measured as chlortetracycline hydrochloride. Result indicates these antibiotics to be present in amounts guaranteed.⁵ Oxytetracycline Hydrochloride⁶ 4-Nitrophenylarsonic Acid⁷ Deficient⁸ 2-Acetylaminio 5-Nitrothiazole

Feeds Containing Drugs—(Continued)

Manufacturer and Brand	Drug	Found	Guaranteed
Lanwood Farms Lanwood Farms Calf-Star.....	Chlortetracycline	.025g/lb	.02g./lb
Delaware Mills, Inc. Delaware Chick Starter.....	Nicarbazin	.0066%	.01%
Hutch & Gambrell, Inc. H & G Broiler Finishing Ration..... H & G Fix-Etts..... Hutchill's Chick Starter.....	Nicarbazin Chlortetracycline Nicarbazin	.0084% .063g/lb .0085%	.0125% .05g/lb .0125%
Southern States Farmers' Exchange, Inc. Soder Mash..... Shimaker..... Shimaker..... Little Women..... Minister.....	Arsanilic Acid..... Arsanilic Acid..... Arsanilic Acid..... Phenothiazine Nicarbazin	.0132% .0099% .010% .45% .0098%	.0132% .0099% .0099% .45% .0125%
Malmaker..... Y-Mix..... Machmaker..... Medicated—Defender..... Medicated—Minuteman.....	Arsanilic Acid Arsanilic Acid Arsanilic Acid Arsanilic Acid Furazolidone Nicarbazin	.0105% .0099% .0396% .0140% .013% .0125%	.0099% .0099% .0396% .0132% .011% .0125%
Medicated—Minuteman.....	{ Chlortetracycline Oxytetracycline Nicarbazin	.0129% .05g/lb .0129%	.05g/lb .05g/lb .0125%
Medicated—Minuteman—SQ.....	{ Chlortetracycline Oxytetracycline Sulfaquinoxaline	.050% .05g/lb .05g/lb	.05% .05g/lb .05g/lb
Medicated—Sentinel.....	{ Chlortetracycline Oxytetracycline	.05g/lb .05g/lb	.05g/lb .05g/lb
Mermaker Plus.....	Nicarbazin Arsanilic Acid	.0127% .0099%	.0125% .0099%
Mermaker Plus.....	Nicarbazin Arsanilic Acid	.0125% .011%	.0125% .0099%
G Primer..... Gultry Wormer..... Gultry Wormer.....	Arsanilic Acid Phenothiazine Nicotine Phenothiazine	.0100% .72% .0562% .54%	.0099% .72% .0562% .75%
More Milling Co., Inc. More Broiler Finisher Pellets (1N)..... More Broiler Finisher Pellets (1N)..... More Chicksaver (1N)..... More Picker-Upper Mash (2A)..... More Super Broiler Ration (1N).....	{ Nicarbazin 3-Nitro Ncarbazon 3-Nitro Ncarbazon 3-Nitro Bacitracin Chlortetracycline Oxytetracycline Ncarbazon 3-Nitro	.0125% .0035% .0125% .005% .0125% .0035% .054g/lb .0125g/lb .0125g/lb .0125% .005%	.0125% .005% .0125% .005% .0125% .005% .075g/lb .0125g/lb .0125g/lb .0125% .005%
O. W. Eshelman & Sons Old Rose Broiler Starter Ration..... Old Rose Medicated T C Feed.....	{ Nicarbazon 3-Nitro Chlortetracycline Oxytetracycline	.0080% none .025g/lb .025g/lb	.0125% .005% .025g/lb .025g/lb
St. County Cooperative Farming Ass'n. St. All-Mash Grow-Egg 824..... St. Starter & Broiler Connecticut Formula 826..... St. Starter & Broiler Ration 820.....	Sulfaquinoxaline Ncarbazon Sodium Arsanilate Sulfaquinoxaline	.0125% .0125% .0105% .022%	.0125% .0125% .0105% .0175%

Feeds Containing Drugs—(Continued)

Manufacturer and Brand	Drug	Found	Guaranteed
Farm Bureau Ass'n.			
Chick Starter Mash.....	Sulfaquinoxaline	.017%	.015%
Chick Starter Mash.....	Nicarbazin	.0109%	.01%
Chick Starter Mash.....	Nicarbazin	.01%	.01%
Chick Starter Mash.....	Nicarbazin	.0106%	.01%
Chick Starter Mash.....	Nicarbazin	.010%	.01%
Complete Developer Mash.....	Sulfaquinoxaline	.0125%	.0125%
Complete Developer Mash.....	Sulfaquinoxaline	.0125%	.0125%
Finisher Mash.....	Nicarbazin	.0130%	.0125%
Finisher Mash.....	Nicarbazin	.010%	.01%
High Energy Broiler Mash.....	Nicarbazin	.0109%	.01%
	Arsanilic Acid	.009%	.009%
Medicated Chlortetracycline Mixture.....	Chlortetracycline	1 g/lb	1 g
Medicated Chlortetracycline Mixture.....	Chlortetracycline	11 g/lb	1 g
Rabbit Food Pellets.....	Sulfaquinoxaline	.0197%	.025%
Rabbit Food Pellets.....	Sulfaquinoxaline	.0123% [†]	.025%
Turkey Starter.....	Sulfaquinoxaline	.0176%	.0175%
Turkey Starter.....	Sulfaquinoxaline	.0113%	.0175%
Flory Milling Co.			
Flory Broiler 18% Finisher.....	Arsanilic Acid	.002% [†]	.01%
Flory Broiler 18% Finisher.....	Arsanilic Acid	.0033% [†]	.01%
Flory Broiler 18% Finisher.....	Arsanilic Acid	none	.01%
Flory Broiler 18% Finisher.....	Arsanilic Acid	.010%	.01%
Flory Medicated Stim-U-Lets.....	Chlortetracycline	4	.05 g
	Oxytetracycline	4	.05 g
Flory 20% Turkey Grower.....	Arsanilic Acid	.0110%	.01%
Flory 20% Turkey Grower.....	4-Nitro	.029% [†]	.025%
Flory 20% Turkey Grower.....	Arsanilic Acid	.010%	.01%
Fred A. Fountain			
Fountain's Improved High Energy Starter-Broiler Pellets.....	Nitrophenide	.0187%	.018%
General Mills, Inc.			
Larro Antibiotic Mix in Surelift.....	Chlortetracycline	4	.05 g
	Oxytetracycline	4	.05 g
Larro Medicated Poultry Surelift.....	Chlortetracycline	4	.025 g
	Oxytetracycline	4	.025 g
Larro Medicated Surepoult Pre-Starter.....	Furazolidone	.004% [†]	.011%
	Furazolidone	.0052% [†]	.011%
Larro Poultry Surelift.....	3-Nitro	.0039%	.005%
	Chlortetracycline	4	.025 g
	Oxytetracycline	4	.025 g
Larro Surebroiler Finisher 23.....	Nicarbazin	.0103%	.01%
	3-Nitro	.0055%	.005%
Larro Surebroiler Finisher 23.....	Nicarbazin	.010%	.01%
	4-Nitro	.005%	.005%
Larro Surebroiler Starter 26.....	3-Nitro	.005%	.005%
	Nicarbazin	.010%	.01%
Larro Surebroiler Starter 26-X.....	Nicarbazin	.010%	.01%
	3-Nitro	.0065%	.005%
Larro Surechick (NCB).....	Nicarbazin	.010%	.01%
Larro Suregrow Complete HE NCB.....	Nicarbazin	.01%	.01%
Larro Surepig (AGS).....	Arsanilic Acid	.0115%	.01%
Larro Surepoult (SQ).....	Sulfaquinoxaline	.0113%	.017%
Larro Sureroaster Complete (NCB).....	Nicarbazin	.0061%	.008%
Larro Sureroaster Complete (NCB).....	Nicarbazin	.010%	.01%
Special Medicated Surebroiler Finisher.....	Nicarbazin	.0125%	.012%
	3-Nitro	.0045%	.004%
	Chlortetracycline	26 g/lb	2 g
Special Medicated Surebroiler Starter.....	Nicarbazin	.0125%	.01%
	Chlortetracycline	11 g/lb	1 g
Special Surebroiler Finisher.....	Nicarbazin	.0125%	.01%
	3-Nitro	.0045%	.004%
Special Surebroiler Starter.....	Nicarbazin	.0125%	.01%
	3-Nitro	.005%	.005%
Hales & Hunter Co.			
Red Comb Broiler Mash.....	Nicarbazin	.0125%	.01%
Red Comb Turkey Grower H.....	4-Nitro	.028%	.02%

[†] Chlortetracycline hydrochloride and oxytetracycline hydrochloride were measured as chlortetracycline hydrochloride. Result indicates these antibiotics to be present in amounts guaranteed.

[‡] Deficient.

Feeds Containing Drugs—(Continued)

Manufacturer and Brand	Drug	Found	Guaranteed
Windsfield Milling Co.			
Windsfield's Worth High Efficiency Starter.....	Sulfaquinoxaline	.0125%	.0125%
Windsfield's Worth High Efficiency Starter.....	Sulfaquinoxaline	.0170%	.0125%
Windsfield's Worth Turkey Starter.....	Sulfaquinoxaline	.0175%	.0175%
Wilmite Milling Co., Inc.			
Wilmite-Co Base Feed.....	Furazolidone	.011%	.011%
Wilmite-Co Broiler Ration.....	Chlortetracycline	.06 g/lb	.05 g/lb
Wilmite-Co 22% Broiler Ration.....	3-Nitro	.0026%	.005%
Wilmite-Co 22% Broiler Ration.....	Nicarbazin	.0102%	.01%
Wilmite-Co 22% Broiler Ration.....	Nicarbazin	.0104%	.01%
Wilmite-Co 22% Broiler Ration.....	Arsanilic Acid	.01%	.01%
Wilmite-Co 22% Broiler Ration.....	Arsanilic Acid	.003%	.01%
Wilmite-Co 22% Broiler Ration.....	Nicarbazin	.0083%	.01%
Wilmite-Co Complete Chick Starter Ration.....	Total Bifurans ⁹	.0032%	.0063%
Wilmite-Co Complete Chick Starter Ration.....	3-Nitro	.0024%	.005%
Wilmite-Co Complete Chick Starter Ration.....	Total Bifurans ⁹	.0063%	.0063%
Wilmite-Co Complete Chick Starter Ration.....	3-Nitro	.0015%	.005%
Wilmite-Co Complete Chick Starter Ration.....	Total Bifurans ⁹	.0063%	.0063%
Wilmite-Co Complete Chick Starter Ration.....	Arsanilic Acid	.0115%	.01%
Wilmite-Co Complete Chick Starter Ration.....	Total Bifurans ⁹	.0063%	.0063%
Wilmite-Co Complete Chick Starter Ration.....	Arsanilic Acid	.01%	.01%
Wilmite-Co Complete Chick Starter Ration.....	Total Bifurans ⁹	.0066%	.0063%
Wilmite-Co Complete Chick Starter Ration.....	Arsanilic Acid	.0105%	.01%
Wilmite-Co Super Broiler 24.....	Arsanilic Acid	.014%	.01%
Wilmite-Co Super Broiler 24.....	Nicarbazin	.0125%	.0125%
Wilmite-Co Super Broiler Finisher.....	Nicarbazin	.0125%	.0125%
Wormack Farmers' Exchange, Inc.			
Wormack Extra Production Super Mash.....	Oxytetracycline	.088 g/lb	.025 g/lb
W. Q. Moon & Co., Inc.			
W. Q. Moon Medicated A-B Mash.....	Chlortetracycline	.14 g/lb	.1 g/lb
Wenden Grain Co.			
Wenden Hi-Energy Starter & Broiler.....	Nicarbazin	.0125%	.0125%
Wenden Hi-Energy Starter & Broiler.....	Arsanilic Acid	.0065%	.01%
Wenden Medicated Mash.....	Chlortetracycline	.07 g/lb	.05 g/lb
Wenden Medicated Mash.....	Procaine penicillin	.007 g/lb	.012 g/lb
Wenden Medicated Mash.....	Bacitracin	.064 g/lb	.038 g/lb
W. Park & Pollard Co., Inc.			
W. Park & Pollard Prime Turkey Starter.....	4-Nitro	.025%	.025%
W. Park & Pollard Prime Turkey Starter.....	Total Bifurans ⁹	.0063%	.0063%
W. Park & Pollard Prime Turkey Starter.....	Furazolidone	.0046%	.011%
W. Park & Pollard Prime Turkey Starter.....	Copper Sulphate	.08%	.15%
W. Park & Pollard Prime Turkey Starter.....	Chlortetracycline	.083 g/lb	.05 g/lb
W. Park & Pollard Prime Turkey Starter.....	Furazolidone	.012%	.011%
W. Park & Pollard Prime Turkey Starter.....	Chlortetracycline	.058 g/lb	.025 g/lb
W. Park & Pollard Prime Turkey Starter.....	Total Bifurans ⁹	.0063%	.0063%
W. Park & Pollard Prime Turkey Starter.....	Nicarbazin	.0102%	.01
W. Park & Pollard Prime Turkey Starter.....	3-Nitro	.005%	.005%
W. Quaker Oats Co.			
W. Quaker Oats 1-O-Pep Chick Starter (BC).....	Total Bifurans ⁹	.0032%	.0063%
W. Quaker Oats 1-O-Pep Growing Mash (B3C6)...	Total Bifurans ⁹	.0092%	.0125%
W. Quaker Oats 1-O-Pep Growing Mash (B3C6)...	Total Bifurans ⁹	.0064%	.0125%

Efficient.

Nitrofurazone & Furazolidone

Feeds Containing Drugs—(Continued)

Manufacturer and Brand	Drug	Found	Guaranteed
Ralston Purina Co.			
Purina Broiler Chow Finisher (E).....	3-Nitro	.006%	.005%
	Nicarbazin....	.0101%	.01%
Purina Broiler Chow Starter (E).....	3-Nitro	.005%	.005%
	Nicarbazin	.0106%	.01%
Purina Broiler Chow Starter (E).....	3-Nitro	.0056%	.005%
	Nicarbazin	.010%	.01%
Purina Chick Growena (E).....	Nicarbazin	.010%	.01%
Purina Medicated Check-R Aid E.....	Chlortetracycline	.032 g/ lb	.05 g/lb
	Furazolidone	.011%	.01%
Purina Pullet Developer NC.....	Nicarbazin	.0103%	.01%
Purina Super Chick Startena (E).....	3-Nitro	.0044%	.0025%
	Nicarbazin	.010%	.01%
Purina Turkey Fatena (E) HS.....	4-Nitro	.035%	.025%
Purina Turkey Finisher (E) HS.....	4-Nitro	.025%	.025%
Purina Turkey Growena (E) HS.....	4-Nitro	.033%	.025%
Purina Turkey Startena (E) SQ.....	Sulfaquinoxaline	.0139%	.0175%
Swansea Grain Co.			
Swansea Quality All Mash Layer.....	3-Nitro	.0064%	.0057%
Swansea Quality Broiler Ration Super.....	Nicarbazin	.0125%	.0125%
Swansea Quality Broiler Ration Super.....	Nicarbazin	.0125%	.0125%
Swansea Quality Chick Starter.....	Nicarbazin	.0125%	.0125%
Swansea Quality Laying Mash.....	3-Nitro	.0057%	.0057%
Swansea Quality Super Chick Starter.....	Nicarbazin	.0150%	.0125%
	3-Nitro	none	.0058%
United Cooperative Farmers, Inc.			
UCF Breeder.....	Arsanilic Acid	.0099%	.0099%
UCF HI NRG All Mash Breeder.....	Arsanilic Acid	.0099%	.0099%
UCF HI NRG All Mash Grower & Layer.....	Arsanilic Acid	.0099%	.0099%
UCF HI NRG Poultry Finishing Ration.....	Total Bifurans ⁹	.0063%	.0063%
	3-Nitro	.0032%	.0046%
UCF HI NRG Poultry Finishing Ration.....	Total Bifurans ⁹	.0063%	.0063%
	Arsanilic Acid	.0020% ⁷	.0099%
UCF HI NRG Poultry Finishing Rat on ..	Total Bifurans ⁹	.0006% ⁷	.0063%
	Arsanilic Acid	.0099%	.0099%
UCF Medicated Booster.....	Total Bifurans ⁹	.0063%	.0063%
	Chlortetracycline	.031 g/lb	.025 g/lb
UCF Medicated Booster.....	Bacitracin	.04 g/lb	.025 g/lb
	Total Bifurans ⁹	.0063%	.0063%
	Chlortetracycline	.031 g/lb	.025 g/lb
	Bacitracin	.038 g/lb	.025 g/lb
UCF Medicated Booster.....	Chlortetracycline	0.1 g/lb	1 g/lb
UCF Super Broiler Mash.....	Total Bifurans ⁹	.0032% ⁷	.0063%
	3-Nitro	.0046%	.0046%
UCF Super Broiler Mash.....	Total Bifurans ⁹	.0012% ⁷	.0063%
	Arsanilic Acid	.0125%	.0099%
UCF Super Starter.....	Sulfaquinoxaline	.024%	.015%
UCF Super Starter.....	Total Bifurans ⁹	.0063%	.0063%
Unity Feeds, Inc.			
Unity Booster-etts.....	Oxytetracycline	.06 g/lb	.05 g/lb
Unity Broiler Maker.....	Nicarbazin	.0116%	.01%
Unity Broiler Starter.....	Nicarbazin	.010%	.01%
	3-Nitro	.005%	.005%
Unity Roaster Maker Pellets.....	Nicarbazin	.01%	.01%
	3-Nitro	.005%	.005%
Unity Super Starter.....	Nitrophenide	.026%	.018%
Unity Trim.....	3-Nitro	.005%	.005%

⁷ Deficient.⁹ Nitrofurazone & Furazolidone.

Feeds Containing Drugs (Continued)

Manufacturer and Brand	Drug	Found	Guaranteed
Natura Grain Co.			
Every-Day Grower Mash.....	Arsanilic Acid	.0065%	.005%
Every-Day Hi-Energy Broiler Mash.....	Arsanilic Acid	.0064%	.005%
	Sulfaquinoxaline	.0128%	.0175%
Every-Day Starter Mash.....	Arsanilic Acid	.0064%	.005%
	Sulfaquinoxaline	.0128%	.0175%
P. Washburn Co.			
Trade Right Breeder.....	3-Nitro	.0055%	.005%
Trade Right Complete Breeder.....	3-Nitro	.0065%	.005%
Trade Right High Energy Layer Mash.....	3-Nitro	.0063%	.005%
Trade Right Laying Mash.....	3-Nitro	.005%	.005%
Trade Right Starting Feed.....	Sulfaquinoxaline	.015%	.015%
P.K. Webster Co.			
Blue Seal Advance Broiler.....	Nicarbazine	.0080%	.0125%
Blue Seal All-Mash Growing Ration.....	Sulfaquinoxaline	.013%	.0175%
Blue Seal Chick Starter.....	Nicarbazine	.0083%	.0125%
Blue Seal Furazolidone Chlortetracycline Mixture.....	Furazolidone	.011%	.011%
	Chlortetracycline	.013%	.011%
Blue Seal Medicated Chick Booster.....	Chlortetracycline	.05 g/lb	.05 g/lb
Blue Seal Medicated Poultry Zest.....	Chlortetracycline	.05 g/lb	.05 g/lb
	Furazolidone	.011%	.011%
Blue Seal Medicated Poultry Zest.....	Chlortetracycline	.066 g/lb	.05 g/lb
	Furazolidone	.011%	.011%
Blue Seal Turkey Starter.....	Sulfaquinoxaline	.022%	.0175%
Perthmore Feeds, Inc.			
Perthmore 38% Broiler Concentrate 497.....	Nicarbazine	.0255%	.025%
	Sodium Arsanilate	.030%	.022%
Perthmore Broiler Finisher 422.....	Nicarbazine	.0059% ⁷	.0125%
	Sodium Arsanilate	.0045% ⁷	.0088%
Perthmore Broiler Finisher 422.....	Nicarbazine	.0041% ⁷	.0125%
	Sodium Arsanilate	.0045% ⁷	.0088%
Perthmore Chick Starter 400.....	Sulfaquinoxaline	.0225%	.0175%
Perthmore Coccidiosis Treatment Ration 411.....	Sulfaquinoxaline	.10%	.1%
Perthmore Complete Growing Ration 409.....	Sulfaquinoxaline	.006% ⁷	.0125%
Perthmore Complete Turkey Fattening Ration 443.....	4-Nitro	.025%	.025%
Perthmore Complete Turkey Growing Ration 442.....	4-Nitro	.025%	.025%
Perthmore Hi-Ener-G 16 - 456.....	Sulfaquinoxaline	.0176%	.0125%
Perthmore Improved Hi-Ener-G Broiler Ration 403.....	Nicarbazine	.0125%	.0125%
Perthmore Improved Hi-Ener-G Broiler Ration 404.....	Nicarbazine	.010%	.01%
	Sodium Arsanilate	.0090%	.0088%
Perthmore Medicated Broiler Perk 406.....	Chlortetracycline	.11 g/lb	.05 g/lb
	Furazolidone	.0114%	.011%
	Nicarbazine	.010%	.01%
Perthmore Medicated Quickies.....	Chlortetracycline	.1 g/lb	.1 g/lb
Perthmore Plus - 2 M Broiler Feed 452.....	Nicarbazine	.0125%	.0125%
	Sodium Arsanilate	.0135%	.0088%
Perthmore Turkey Growing Ration 441.....	4-Nitro	.025%	.025%
Perthmore Grain Co.			
Preferred High Energy Starter-Broiler Ration.....	Nitrophenide	.0187%	.01875%
Preferred Starter & Broiler Ration.....	Nitrophenide	.0125%	.0125%
Perthmore Feeds, Inc.			
Perthmore 20 - Super Feed Medicated.....	Nicarbazine	.0106%	.01%
	3-Nitro	.005%	.005%

Deficient.

Drugs and Drug Mixtures

Manufacturer and Brand	Drug	Found	Guarantee
Abbott Laboratories			
Pro-Gen Sodium.....	Sodium arsanilate	100.0%	—
American Cyanamid Co.			
Accopen 4 Antibiotic Feed Supplement..	Procaine penicillin	4.72 g/lb	4. g/lb
Accopen 4 Antibiotic Feed Supplement..	Procaine penicillin	4.4 g/lb	4. g/lb
Arsanilic Acid 20%.....	Arsanilic Acid	20.0%	20.0%
Arsanilic Acid 20%.....	Arsanilic Acid	20.8%	20.0%
Aurofac 2A.....	Chlortetracycline hydrochloride	4.1 g/lb	3.6 g/lb
Aurofac 2A.....	Chlortetracycline hydrochloride	3.6 g/lb	3.6 g/lb
Aurofac 1A.....	Chlortetracycline hydrochloride	10. g/lb	10. g/lb
Aurofac Chlorotet 1.8 g/lb.	Chlortetracycline hydrochloride	2.1 g/lb	1.8 g/lb
Megasul 25%.....	Nitrophenide	26.0%	25.0%
Chemo-Puro Mfg. Co.			
3-Nitroxyphenarsonic Acid.....	3-Nitro-4-Hydroxyphenyl- arsonic Acid	25.0%	25.0%
Commercial Solvents Corp.			
Baciferm-PB.....	Bacitracin	7.7 g/lb	7.5 g/lb
Baciferm-25.....	Procaine Penicillin Bacitracin	2.5 g/lb 18.8 g/lb	2.5 g/lb 25. g/lb
Hess & Clark, Inc.			
Bifuran.....	Total Bifurans ¹		
NF 180 Furazolidone 11%.....	Furazolidone	12.85%	12.85%
NF 180 Furazolidone 11%.....	Furazolidone	11.0%	11.0%
NF 180 Furazolidone 11%.....	Furazolidone	11.2%	11.0%
Dr. Hess EFZ Mix.....	Nitrofurazone	11.0%	11.0%
		11.2%	11.2%
Merck & Co., Inc.			
Nicarbazin Mixture 25%.....	Nicarbazin	25.0%	25.0%
Nicarbazin Mixture 25%.....	Nicarbazin	25.0%	25.0%
Nicarbazin Mixture 25%.....	Nicarbazin	25.0%	25.0%
Nicarbazin Mixture 25%.....	Nicarbazin	25.5%	25.0%
Nicarbazin Mixture 25%.....	Nicarbazin	25.0%	25.0%
Pro-Pen with Vitamin B ₁₂ and Antibiotic Feed Supplement.....	Procaine Penicillin	2.1 g/lb	2. g/lb
Sulfaquinoxaline 25%.....	Sulfaquinoxaline	25.0%	25.0%
Sulfaquinoxaline 25%.....	Sulfaquinoxaline	25.1%	25.0%
Sulfaquinoxaline 25%.....	Sulfaquinoxaline	25.4%	25.0%
Sulfaquinoxaline 25%.....	Sulfaquinoxaline	25.6%	25.0%
Sulfaquinoxaline.....	Sulfaquinoxaline	99.0%	—
Chas. Pfizer & Co., Inc.			
TM-10 Oxytetracycline (Terramycin) Animal Mix.....	Oxytetracycline hydrochloride	11.1 g/lb	10. g/lb
Dr. Salsbury's Laboratories			
Histostat.....	4-Nitrophenylarsonic Acid	25.0%	25.0%
Histostat.....	4-Nitrophenylarsonic Acid	25.0%	25.0%
3-Nitro Powder.....	3-Nitro-4-Hydroxyphenyl- arsonic Acid	10.0%	10.0%
U. S. Industrial Chemical Co.			
Antibiotic Feed Supplement.....	Procaine Penicillin	2. g/lb	2. g/lb
Vineland Poultry Labs.			
Sulfaquinoxaline Feedmix.....	Sulfaquinoxaline	25.0%	25.0%
Wirthmore Feeds, Inc.			
Wirthmore Ketrol...	Sodium propionate	12.5%	12.5%
White Laboratories, Inc.			
Lipamone.....	Dienestrol diacetate	14.4%	14.9%

Nitrofurazone and Furazolidone

Feed Supplements, Oils, and Vitamin and Drug Mixtures

Manufacturer and Brand		Found		Guaranteed	
American Cyanamid Co. Acropren 2, 3,	Procaine penicillin	1 lb.	g. lb.
			Vitamin B ₁₂	3 lb.	mg. lb.
			Vitamin B ₆	3 lb.	mg. lb.
			Riboflavin	2.4 lb.	mg. lb.
			Pantothenic acid	2000	mg. lb.
			Niacin	2046	mg. lb.
			Riboflavin	2000	mg. lb.
			Pantothenic acid	2000	mg. lb.
			Niacin	2000	mg. lb.
			Riboflavin	2000	mg. lb.
Fortified 4 Fascenton 10	Pantothenic acid	4000	mg. lb.
			Niacin	9000	mg. lb.
			Choline chloride	11375	mg. lb.
			Riboflavin	4210	mg. lb.
			Vitamin B ₁₂	10 lb.	mg. lb.
Wheatland Calf Meal Co. Blattman's Calf Paln Blattman's Calf Paln	Vitamin A	5320	mg. lb.
			Riboflavin	26 lb.	mg. lb.
			Vitamin A	18620	mg. lb.
			Riboflavin	38	mg. lb.
The Borden Co. Expresol M.F.T. Blend 800	Riboflavin	48	mg. lb.
			Procaine penicillin	685	g. lb.
			Vitamin B ₁₂	20	mg. lb.
			Pantothenic acid	80	mg. lb.
			Choline chloride	1080	mg. lb.
			Niacin	162	mg. lb.
			Biotin chloride	6683	mg. lb.
			Riboflavin	33	mg. lb.
			Biotin chloride	4540	mg. lb.
			Vitamin A	151380	mg. lb.
Hayday Per-Pop	Procaine penicillin	13 lb.	mg. lb.
			Riboflavin	12 lb.	mg. lb.
			Niacin	122	mg. lb.
			Vitamin B ₁₂	1 lb.	mg. lb.
			Procaine penicillin	1 lb.	mg. lb.
			Vitamin B ₁₂	1 lb.	mg. lb.
			Procaine penicillin	1 lb.	mg. lb.
			Vitamin B ₁₂	1 lb.	mg. lb.
			Procaine penicillin	1 lb.	mg. lb.
			Vitamin B ₁₂	1 lb.	mg. lb.

*Deficient.

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand	Found	Guaranteed
Commercial Solvents Corp. B.V.-4 Riboflavin Supplement B.V.-100 Dried Grain & Cane Syrup Fermentation Solubles B.V.-353 Riboflavin Supplement B.V.-500 Dried Grain & Cane Syrup Fermentation Solubles C.S.C. Calcium Pantothenate Supplement 10 C.S.C. Choline Supplement 25 Choline chloride Drum Run Vitamin B ₁₂ Supplement Solufem	4200 mg lb 58.5 mg lb 16370 mg lb 274 mg lb 14722 mg lb 75.37 mg lb 71.09 mg lb 19 mg lb 69.4 mg lb 78.9 mg lb 131 mg lb 4130 mg lb 3 mg lb	4000 mg lb 45.4 mg lb 16000 mg lb 227 mg lb 14722 mg lb 25.0 mg lb 70.0 mg lb 19 mg lb 45 mg lb 100 mg lb 100 mg lb 2500 mg lb .15 mg lb
Dawe's Laboratories, Inc. Dawe's Fermentation Supplement Dawe's Vitamel	50.8 mg lb 18 mg lb 14500 units lb 37.5 mg lb 69.0 mg lb 204 mg lb 386.2 mg lb .021 g lb 33.3 mg lb .15 mg lb none* 76 mg lb 261 mg lb 4620 mg lb .015* g/lb 38.3 mg lb 15 mg lb 7080* units lb 76.0 mg lb 5400 mg lb .015* g/lb	45.4 mg lb .15 mg lb 14500 units lb 31.75 mg lb 66.0 mg lb 180 mg lb 3500 mg lb .03 g lb 31.75 mg lb .15 mg lb 14500 units lb 66 mg lb 180 mg lb 3500 mg lb .03 g lb 31.75 mg lb .15 mg lb 14500 units lb 66 mg lb 3500 mg lb .03 g/lb
Dawe's Vitamel	33.3 mg lb .15 mg lb none* 76 mg lb 261 mg lb 4620 mg lb .015* g/lb 38.3 mg lb 15 mg lb 7080* units lb 76.0 mg lb 5400 mg lb .015* g/lb	31.75 mg lb .15 mg lb 14500 units lb 66 mg lb 180 mg lb 3500 mg lb .03 g lb 31.75 mg lb .15 mg lb 14500 units lb 66 mg lb 180 mg lb 3500 mg lb .03 g/lb

*Deficient.

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand	Pound	Guaranteed
Commercial Solvents Corp.—(Continued)		
Dawe's Vitamelt		
Riboflavin	40.3	mg/lb
Vitamin B ₁₂	.15	mg/lb
Vitamin A	14500	units/lb
Pantothenic acid	50.0	mg/lb
Niacin	180	mg/lb
Choline chloride	5200	mg/lb
Procaine penicillin	.013*	g/lb
Riboflavin	37.7	mg/lb
Vitamin B ₁₂	.09	mg/lb
Vitamin A	8400*	units/lb
Pantothenic acid	66.4	mg/lb
Niacin	140	mg/lb
Choline chloride	5800	mg/lb
Procaine penicillin	.017*	g/lb
Niacin	51.6*	mg/lb
Riboflavin	22.6	mg/lb
Vitamin A	21250*	units/lb
Pantothenic acid	24.0	mg/lb
Niacin	94	mg/lb
Choline chloride	3250	mg/lb
Vitamin A	10140	units/lb
E. F. Drew & Co., Inc.		
Vitamin A Oil	8000	units/lb
Gorton-Pew Fisheries Co., Ltd.		
Gorton's Al-Blenl "Junior"		
Vitamin A	30000	units/lb
Carotene	10.0	mg/lb
Riboflavin	43	mg/lb
Niacin	267	mg/lb
Vitamin A	61740	units/lb
Carotene	18.5	mg/lb
Riboflavin	27.4	mg/lb
Niacin	150	mg/lb
Vitamin A	96130	units/lb
Riboflavin	70	mg/lb
Pantothenic acid	3.3*	mg/lb
Vitamin B ₁₂	.12	mg/lb
Niacin	460	mg/lb
Gorton's Mar-V-Tic Blend		
Vitamin A	30000	units/lb
Carotene	9	mg/lb
Riboflavin	18	mg/lb
Niacin	200	mg/lb
Vitamin A	50000	units/lb
Carotene	12	mg/lb
Riboflavin	14	mg/lb
Niacin	200	mg/lb
Vitamin A	90000	units/lb
Riboflavin	70	mg/lb
Pantothenic acid	60	mg/lb
Vitamin B ₁₂	.12	mg/lb
Niacin	460	mg/lb

*Deficient.

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand	Found	Guaranteed
Gorton-Pew Fisheries Co., Ltd.—(Continued) Gorton's Turkey Blend.....	Vitamin A 75,564 units lb. Carotene 400 mg lb. Riboflavin 41.4 mg lb. Niacin 500 mg lb. Calcium pantothenate 50 mg lb. Vitamin A 1750 units g.	70000 units lb. 6 mg lb. 40 mg lb. 500 mg lb. 50 mg lb. 1500 units g.
Gorton's Vitamin A & D Feeding Oil.....	Vitamin A 1000 units g. Vitamin A 1000 units g.	1000 units g. 1000 units g.
Marine Products Co. Finest Norwegian Cod Liver Oil..... Finest Norwegian Cod Liver Oil.....	Choline chloride 26.5% Niacin 69.4% Riboflavin 23.25 mg lb. Calcium pantothenate 4000 mg lb. Niacin 10375 mg lb. Choline chloride 10900 mg lb. Riboflavin 2480 mg lb. Calcium pantothenate 4000 mg lb. Niacin 6000 mg lb. Choline chloride 10290 mg lb.	25.0% — 2000 mg lb. 4000 mg lb. 10000 mg lb. 109000 mg lb. 2000 mg lb. 4000 mg lb. 6000 mg lb. 10000 mg lb.
Merck & Co., Inc. Choline Chloride Mixture..... Niacin, U.S.P., Nicotine Acid..... No. 88 Vitamin Mixture.....	Riboflavin 5200 mg lb.	4000 mg lb.
New York Quinine & Chemical Works, Inc. Riboflavin Mixture Feed Supplement.....	Vitamin A 440380 units lb. Riboflavin 680 mg lb. Niacin 4000 mg lb. Calcium pantothenate 600 mg lb. Vitamin B ₆ 66 mg lb. Ascorbic acid 3.6% Vitamin A 317800 units lb. Riboflavin 300 mg lb. Niacin 4010 mg lb. Calcium pantothenate 600 mg lb. Choline chloride 20880 mg lb. Procaine penicillin .84 g lb.	400000 units lb. 600 mg lb. 4000 mg lb. 600 mg lb. 6 mg lb. 3.6% 300000 units lb. 300 mg lb. 4000 mg lb. 600 mg lb. 20000 mg/lb 8 g/lb
Nopco Chemical Co. Nopco Breeder Premix No. 1.....		
Nopco Brioler Premix No. 3.....		

*Deficient.

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand	Found	Guaranteed	
Nopco Chemical Co.—(Continued) Nopco Broiler Premix.....	Vitamin A { Riboflavin Niacin Calcium pantothenate Choline chloride Vitamin B ₁₂ Proline penicillin Ascorbic acid Vitamin A Riboflavin Niacin Calcium pantothenate Choline chloride Vitamin B ₁₂ Penicillin penicillin Vitamin A { Oxytetracycline hydro- chloride Vitamin B ₁₂ Vitamin A Niacin { Riboflavin Calcium pantothenate Niacin Choline chloride Riboflavin Calcium pantothenate	416700 667 3340 833 47250 1 667 3 667 300000 400 4000 600 20000 4 8 5000 1 3 5000 60 0 36500 12000 6000 45800 15000 10300 70 25 6	units/lb mg/lb mg/lb mg/lb mg/lb mg/lb g/lb units/lb mg/lb mg/lb mg/lb mg/lb mg/lb g/lb units/lb g/lb log/lb units/g mg/lb mg/lb mg/lb mg/lb mg/lb mg/lb mg/lb mg/lb mg/lb mg/lb
Nopco Starter Premix No. 4.			
Quodrex A source of Vitamins A & D.			
Charles Pfizer & Co., Inc. T-M 1-3			
Stabilizer Vitamins, Inc. Stabilized Vitamin A & D in Powder Form			
Sterwin Chemicals, Inc. Niacin Premix Type S2			
Type 131 Vitamin Concentrate.....			
132 Vitamin Concentrate			
U.S. Industrial Chemicals Co. U.S. 1 Choline Chloride			
U.S. 1 35% Choline Chloride Dry Mix			
Vitamin B ₁₂ Supplement			

*Deficient.

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand		Pound	Guaranteed
Firam Walker & Sons, Inc. Walker's Stimulflav Corn Distillers' Dried Solubles Walker's Stimulflav Corn Distillers' Dried Solubles	Riboflavin	14.6 mg. lb.	—
	Riboflavin	13.2 mg. lb.	—
Western Condensing Co. Peelbles M-N-C	Riboflavin	29.3 mg. lb.	23 mg. lb.
Whitmoyer Laboratories, Inc. Clo-Meal	Riboflavin	105 mg. lb.	100 mg. lb.
	Pantothenic acid	72 mg. lb.	100 mg. lb.
	Niacin	711 mg. lb.	700 mg. lb.
	Choline chloride	5000 mg. lb.	5000 mg. lb.
	Riboflavin	100 mg. lb.	100 mg. lb.
	Pantothenic acid	75 mg. lb.	100 mg. lb.
	Niacin	800 mg. lb.	700 mg. lb.
	Choline chloride	5690 mg. lb.	5000 mg. lb.
	Vitamin A	154400 units/lb.	100000 units/lb.
	Riboflavin	111 mg. lb.	100 mg. lb.
	Pantothenic acid	75 mg. lb.	100 mg. lb.
	Niacin	812 mg. lb.	700 mg. lb.
Flav-A-Dec	Choline chloride	7320 mg. lb.	6000 mg. lb.
	Vitamin A	100000 units/lb.	100000 units/lb.
	Riboflavin	100 mg. lb.	100 mg. lb.
	Pantothenic acid	56 mg. lb.	100 mg. lb.
Whit-Vim Custom Mix No. 2	Niacin	1105 mg. lb.	700 mg. lb.
	Choline chloride	6190 mg. lb.	6000 mg. lb.
	Vitamin A	555150 units/lb.	400000 units/lb.
	Riboflavin	400 mg. lb.	400 mg. lb.
Whitmoyer Vitamin A & D Feeding Oil Whitmoyer Vitamin A & D Feeding Oil Whitmoyer's Witcod	Calcium pantothenate	403 mg. lb.	400 mg. lb.
	Niacin	4000 mg. lb.	4000 mg. lb.
	Vitamin A	1500 units/g.	1500 units/g.
	Vitamin A	1740 units/g.	1500 units/g.
	Vitamin A	2600 units/g.	2250 units/g.

*Deficient.

Alfalfa Meals

Manufacturer and Brand	Protein		Fiber		Carotene Milligrams per Pound	U.S.P. Units Vitamin A per Pound (Vitamin A Equivalent from Carotene)
	Found	Guar- anteed	Found	Guar- anteed		
Bremco Alfalfa Mills, Inc.						
Mediagreen Alfalfa Meal	16.3	17.	29.4*	27.	52.8	88020
Mediagreen Alfalfa Meal	18.5	17.	24.8	27.	44.	73350
Calvert Milling Co.						
17% Dehydrated Alfalfa Meal	17.0	17.	27.8	27.	37.2	62010
The A. B. Caple Co.						
Alfalfa Crumbles	13.6	13.	37.3*	33.	2.4	3991
Alfalfa Crumbles	13.4	13.	36.1*	33.	1.5	2501
Alfalfa Crumbles	13.1	13.	30.8	33.	2.0	3334
Alfalfa Crumbles	13.6	13.	32.9	33.	1.9	3170
Alfalfa Pellets	13.8	13.	32.7	33.	3.0	5000
Capex Dehydrated Alfalfa Meal	14.5**	17.	30.0*	27.	43.5	22510
Capex Dehydrated Alfalfa Meal	14.4**	17.	30.8*	27.	38.6	64350
Capex Dehydrated Alfalfa Meal	17.4	17.	24.0	27.	54.4	90680
E. F. Drew & Co.						
Alfalfa Meal	17.7	-	25.3	-	28.6	47680
Erle Alfalfa Mills, Inc.						
Leafy Erle Brand Dehydrated Alfalfa Meal	15.7**	17.	20.0	27.	32.7	54510
Leafy Erle Brand Dehydrated Alfalfa Meal	19.5	17.	19.3	27.	30.4	50680
Leafy Erle Brand Dehydrated Alfalfa Meal	17.0	17.	26.9	27.	36.0	60010
Farm Bureau Coop. Assn., Inc.						
Dehydrated Alfalfa Meal	15.8**	17.	30.9*	27.	33.8	56340
Dehydrated Alfalfa Meal	17.3	17.	29.0*	27.	36.5	60850
Dehydrated Alfalfa Meal	19.0	17.	23.1	27.	45.8	76350
Keystone Chemurgic Corp.						
2-Avant Extracted 20% Dehydrated Alfalfa Meal Residue	26.1	20.	15.8	20.	13.6	22670

Alfalfa Meals—(Continued)

Manufacturer and Brand	Protein		Fiber		Carotene Milligrams per Pound	U.S.P. Units Vitamin A per Pound (Vitamin A Equivalent from Carotene)
	Found	Guar- anteed	Found	Guar- anteed		
National Alfalfa Dehydrating & Milling Co.						
Jack Rabbit 17%, Alfalfa Meal	17.5	17	23.8	27	58.8	98020
Krumbles	14.1	15	32.3	33	10.0	16670
17%, Protein Dehydrated Alfalfa Meal	18.9	17	24.5	27	55.6	92,990
17%, Protein Dehydrated Alfalfa Meal	17.6	17	27.6	27	50.0	83,550
17%, Protein Dehydrated Alfalfa Meal	19.2	17	23.8	27	62.6	104,354
17%, Protein Dehydrated Alfalfa Meal	18.6	17	20.9	27	97.6	162,700
17%, Protein Dehydrated Alfalfa Meal	18.1	17	25.9	27	57.2	93,350
17%, Protein Dehydrated Alfalfa Meal	17.1	17	27.7	27	68.5	114,190
National 20%, Dehydrated Alfalfa Meal	21.0	20	21.6	20	86.6	144,360
Keystone Chemurgic Corp.						
Purina Alfalfa Meal	14.1	13	32.4	33	.9	1500
Schoenck Farms, Inc.						
Schoenck's 17%, Super Green Dehydrated Alfalfa Meal	17.3	17	24.7	27	68.1	113,522
W. J. Small Co.						
17% Dehydrated Alfalfa Meal 1% Animal Fat	17.7	17	27.0	27	50.0	83,350
Toledo Alfalfa Mills						
Shamrock Brand Alfalfa Meal	20.4	17	23.9	27	51.2	85,350
Vita-A-Green Supreme Pure Dehydrated Alfalfa Meal	17.6	17	26.2	27	37.7	62,850

* Excessive fiber.

** Deficient in protein.

Mineral Mixtures

Manufacturer and Brand	Mineral	Found	Guaranteed
Consolidated Rendering Co. Corenco Feeding Bone Meal.	Phosphorus	12.4	11.5
Eastman Chemical Products Fecmangan.	Manganese	27.4	27.3
International Minerals & Chemical Corp. Beaded Dyna Phos.	Calcium Phosphorus Fluorine	21.4 18.7 .07	21.0 18.5 .12*
Dynafos Dicalcium Phosphate.	Calcium Phosphorus Fluorine	23.5 17.7 10	21. - 24.** 18.5 .12*
Inestone Products Corp. of America Delamix Trace Minerals Premix.	Manganese Iron Copper Iodine Calcium Cobalt	6.1 2.1 22 12 29.5 0.025	6.0 2.0 .2 .12 26.5 .02
Lime Crest Calcite Flour.	Calcium Magnesium	34.0 2.6	33.0 2.6
Morton Salt Co. Morton Special Mixing Salt.	Sodium Chloride	100.0	100.
Wm Reardon & Sons Edible Bone Meal ²	Phosphorus	8.5 ¹	12.0
Wilmoyr Laboratories, Inc. Fra-Min No. 1.	Manganese Iodine Copper Cobalt Iron Calcium	6.1 .12 20 05 2.2 32.4	6.00 .12 .20 .04 2.50 26.0

* Maximum guarantee.

* Minimum and Maximum guarantees.

Deficient

Mislabeled. Product is meat and bone scraps—not bone meal.

Oat Products

Manufacturer and Brand	Protein		Fat		Fiber		Results of Microscopic Examination
	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	
Doughboy Industries, Inc. Medium Ground White Oats	9.6	10.	—	2.5	16.9	15	Fiber excessive. Product mislabeled. It is either grain screenings or mixed feed oats.
Medium Ground White Oats	9.6	10	2.6	2.5	17.8	15	Fiber excessive. Product mislabeled. Sample is mixed screenings.
Medium Ground White Oats	11.3 10.1	11 10	3.0	3 2.5	13.7 16.4	13 15	As represented. Fiber excessive. Mislabeled. Sample appears to be grain screenings.
General Mills, Inc. Medium Ground White Oats	13.0 15.5	12 12.	4.7 6.9	3.5 4.5	12.1 6.9	13 13	As represented. Mislabeled. Product appears to be oat middlings.
Pulverized Oats	15.0	12	—	4.5	8.2	13	Mislabeled. Appears to be a mixture of oat and wheat products.
Purity Coarse Ground White Oats	12.7	12	—	4.5	13.7	13	As represented.
Purity Coarse Ground White Oats	11.4	12	4.0	4.5	15.6	13	Fiber excessive.
Purity Medium Ground White Oats	14.1	12.	—	4.5	11.5	13	As represented.
Purity Pulverized White Oats	11.3	12.	4.2	4.5	14.8	13	Fiber excessive.
Purity Pulverized White Oats	14.6	12	—	4.5	9.4	13	As represented.
Oatley Flour Mills Co., Ltd. Pulverized Mixed Feed Oats	11.3	10	—	3	13.8	14	As represented.
Pulverized Mixed Feed Oats	10.7	10.	—	3	14.6	14	As represented.
Pulverized Mixed Feed Oats	11.8	10.	—	3	14.0	14.	As represented.
Pulverized Mixed Feed Oats	12.8	10.	—	3	10.8	14.	As represented.
The Quaker Oats Co. of Canada, Ltd. Oat Chop	9.0	—	—	—	15.8	—	Mislabeled. Product is mixed screenings.
Peterborough Oat Mill By-Product	2.9	2.5	—	1.	—	32.	As represented.
Peterborough Oat Mill By-Product	2.8	2.5	—	1.	—	32.	As represented.
Peterborough Oat Mill By-Product	3.4	2.5	—	1.	—	32.	As represented.

Oat Products (Continued)

Manufacturer and Brand	Protein		Fat		Fiber		Results of Microscopic Examination
	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	
James Wilson & Sons, Ltd. Wheaties Canadian Wheatens Creamed Wheat Oats	9.4	—	3.9	—	16.6	—	Mislabeled. Product is ground mixed feed oats.
Wheaties Canadian Wheatens Creamed Wheat Oats	8.0	—	3.9	—	19.3	—	Mislabeled. Product is ground mixed feed oats on ground golden section flaps.
Wheaties Canadian Wheatens Creamed Wheat Oats	11.8	—	—	—	9.7	—	As represented.
Wheaties Canadian Wheatens Creamed Wheat Oats	9.5	—	1.20	—	15.7	—	As represented.
Wheaties Canadian Wheatens Creamed Wheat Oats	9.2	—	—	—	18.5	—	Mislabeled. Product is either ground mixed feed oats or ground golden section flaps.
Wheaties Canadian Wheatens Creamed Wheat Oats	9	—	—	—	20.2	—	Mislabeled. Product is either ground mixed feed oats or ground golden section flaps.
Wheaties Canadian Wheatens Creamed Wheat Oats	9.5	—	—	—	15.3	—	As represented.
Wheaties Canadian Wheatens Creamed Wheat Oats	10.6	—	—	—	11.2	—	As represented.
Wheaties Canadian Wheatens Creamed Wheat Oats	12.1	10.5	—	3	13.8	13	Mislabeled. Product is ground mixed feed oats.
Wheaties Canadian Wheatens Creamed Wheat Oats	11.1	10.5	3.4	3	13.7	13	Mislabeled. Product is ground mixed feed oats.

Directory of Manufacturers who Registered Feeds for Sale in Massachusetts in 1958

- Abbott Laboratories, 1400 Sheridan Rd., N. Chicago, Ill.
 Acme-Evans Co., Inc., 902 West Washington Ave., Indianapolis 9, Ind.
 L. P. Adams Co., 484 Housatonic St., Dalton, Mass.
 Ajax Dog Food Co., 49 Pine St., Dedham, Mass.
 Albers Milling Co., 5045 Wilshire Blvd., Los Angeles 36, Cal.
 Allied Mills, Inc., Chicago, Ill.
 American Agricultural Chemical Co., 100 Church St., New York 7, N. Y.
 American Crabmeat Co., Inc., P. O. Box 250, Boston 1, Mass.
 American Crystal Sugar Co., 600 Boston Bldg., Denver, Col.
 American Cyanamid Co., Fine Chemicals Div., P. O. Box 672, Princeton, N. J.
 American Maize-Products Co., 250 Park Ave., New York 17, N. Y.
 Anheuser-Busch, Inc., 721 Pestalozzi St., St. Louis 18, Mo.
 Archer-Daniels-Midland Co., Linseed Oil Meal Dept., P. P. Box 839, Minneapolis 2, Minn.
 Archer-Daniels-Midland Co., Soybean Oil Meal Dept., 700 Investors Bldg., Minneapolis, Minn.
 Armour & Co., U. S. Yards, Chicago, Ill.
 Astrol Products, Inc., 57-59 Commerce St., Brooklyn 31, N. Y.
 Atlantic Processing Co., P. O. Drawer 248, Amagansett, N. Y.
- B & W Canning Co., Inc., P. O. Box 98, Groveland, Florida
 E. W. Bailey & Co., Inc., Montpelier, Vt.
 H. J. Baker & Bro., 600 Fifth Ave., New York 20, N. Y.
 Barber & Bennett, Inc., Arch & Church Sts., Albany, N. Y.
 Battle Creek Dog Food Co., 60 East State St., Battle Creek, Mich.
 Beacon Milling Co., Inc., Cayuga, N. Y. U
 Berkman Grain Co., North Franklin, Conn.
 Best Dog Food Co., 447 Timpson Place, Bronx 55, N. Y.
 Best Feeds & Farm Supplies, Inc., 271 W. Wheeling St., Washington, Pa
 Best Foods, Inc., 1442 Marine Trust Bldg., Buffalo, N. Y.
 Blatchford Calf Meal Co., 2-26 East Madison St., Waukegan, Ill.
 Bonavista Fish Meals and Oils Ltd., Hill O'Chips, St. John's Newfoundland
 Bordon Co., Special Products Div., 350 Madison Ave., New York 17, N. Y.
 Bordon Grain Co., 700 West Water St., Taunton, Mass.
 Boston Molasses Co., 920 East 1st St., South Boston 27, Mass.
 C. W. Brister & Son, 195-209 North St., Auburn, N. Y.
 Brown-Forman Distillers Corp., 1908 Howard St., Louisville, KYy.
 Jas. P. Brown Co., Inc., 273 Franklin St., Worcester, Mass.
 Buckeye Cellulose Corp., 301 East Sixth St., Cincinnati, Ohio
- Canada Linseed Oil Mills, Ltd., 2215 Notre Dame St., East, Montreal 24, Que., Canada
 Canada Starch Co., Ltd., 1940 Sun Life Bldg., Montreal, Que., Canada
 The A. B. Caple Co., Station A, Box 27, Toledo 5, Ohio
 Cargill, Inc., 200 Grain Exchange Bldg., Minneapolis 15, Minn.
 Carling Brewing Co., 143 Worcester St., Natick, Mass.
 Chemo Puro Manufacturing Corp., Newark 5, N. J.
 S. J. Cherry & Sons, Ltd., 166 King St., Preston, Ontario, Canada
 Citrus Feed Co., P. O. Box 513, Lakeland, Florida
 Clinton Corn Processing Co., Clinton, Iowa
 Clyde Milling Corp., Clyde, N. Y.
 Colby Cooperative Starch Co., Box 162, Caribou, Maine
 Commercial Solvents Corp., 1331 South First St., Terre Haute, Ind.
 Community Service, Inc., Canaan, Conn.
 Connecticut Bi-Products, Hop River Road, Columbia, Conn.
 Consolidated Rendering Co., 178 Atlantic Ave., Boston 10, Mass.
 Corn Products Refining Co., 17 Battery Pl., New York 4, N. Y.
 Corn Products Sales Co., 17 Battery Place, New York 4, N. Y.
 Courcy & Sons Grain Co., Taunton, Mass.
 Cover Grain & Feed Co., 150 Middle St., Lowell, Mass
- Dawe's Laboratories, Inc., 4800 South Richard St., Chicago 32, Ill.
 Dawnwood Farms, Smithfield Road, Amenia, N. Y.

- Dean & Lee, Chemung St., Horseheads, N. Y.
 Decatur Milling Co., Inc., 717 North Union St., Decatur, Ill.
 Delaware Mills, Inc., Front St., Deposit, N. Y.
 Delphos Grain & Soya Products Co., South Jefferson St., Delphos, Ohio
 F. Diehl & Son, Inc., 180 Linden St., Wellesley 81, Mass.
 Dietrich & Gambrill, Inc., South Carroll St., Frederick, Md.
 Domestic Concentrates, Inc., 25 Broad St., New York 4, N. Y.
 Dow Brewery Ltd., 990 Notre Dame St., W. Montreal, Quebec, Canada
 John C. Dow Co., 40-44 Prospect St., Gloucester, Mass.
 Doyle Packing Co., Inc., of N. J., 165 Branchport Ave., Long Branch, N. J.
 E. F. Drew & Co., Inc., 15 East 26th St., New York City 10, N. Y.
 J. L. Dunnell & Son, Bernardston, Mass.
 E. I. du Pont de Nemours & Co., Wilmington, Del.

 Eastern States Farmers' Exchange, Inc., 26 Central St., West Springfield, Mass.
 Eastman Chemical Products, Inc., Kingsport, Tenn.
 8 in 1 Pet Products, Inc., 42-20 22nd St., Long Island City, N. Y.
 Elmore Milling Co., Inc., 52 Main St., Oneonta, N. Y.
 Erie Alfalfa Mills, Inc., P. O. Box 848, Erie, Mich.
 John W. Eshelman & Sons, 244 North Queen St., Lancaster, Penn.
 Essex County Cooperative Farming Association, 144 South Main St., Topsfield, Mass.
 Evans Milling Co., Inc., 1730 West Michigan St., Indianapolis, Ind.

 Farm Bureau Association, 155 Lexington St., Waltham 54, Mass.
 Farm Bureau Cooperative Association, Inc., 245 North High St., Columbus 16, Ohio
 Farmers Feed Co., 375 Johnson Ave., Brooklyn 6, N. Y.
 Ferneau Grain Co., Gibson Bldg., Blanchester, Ohio
 Fishery Products, Inc., 1200 West Ninth St., Cleveland 13, Ohio
 Florida Citrus Canners Cooperative, P. O. Box 1111, Lake Wales, Florida
 Flory Milling Co., Inc., North Main St., Bangor, Penn.
 FMS, Inc., Thomasville, Penn.
 Fred A. Fountain, 355 Tremont St., Taunton, Mass.

 General Foods Corp., 250 North St., White Plains, N. Y.
 General Foods Corp., Gaines Div., 180 South Dearborn Ave., Kankakee, Ill.
 General Foods Corp., Post Cereals Div., 275 Cliff St., Battle Creek, Mich.
 General Mills, Inc., 400 Second Ave., South, Minneapolis, Minn.
 General Mills, Inc., Larowe Region, 15800 W. McNichols Rd., Detroit 35, Mich.
 Glidden Co., Soya Products Div., 1825 North Laramie Ave., Chicago 39, Ill.
 Gloucester By-Products, Inc., State Fish Pier, Gloucester, Mass.
 Roy Goff & Co., Inc., 240 Fairfield Ave., Bridgeport, Conn.
 Goldenrod Oil Meal Sales Co., 727 Beale Ave., Memphis 1, Tenn.
 Gorton Pew Fisheries Co., Ltd., 327 Main St., Gloucester, Mass.
 Grandin Brothers Corp., 1029 Allen St. Ext., Jamestown, N. Y.
 Great Atlantic & Pacific Tea Co., 817-512 Nicollet Bldg., Minneapolis 2, Minn.
 Great Western Sugar Co., 1530 — 16th St., Denver, Col.

 Haffenreffer & Co., Inc., 30 Germania St., Boston 30., Mass.
 Hales & Hunter Co., 141 West Jackson Blvd., Chicago 4, Ill.
 D. Harbeck & Sons, 405 Earle St., New Bedford, Mass.
 Harper Feed Mills, Inc., 271 West Wheeling St., Washington, Penn.
 Hartz Mountain Products Corp., 36 Cooper Square, New York 3, N. Y.
 Hayward, Inc., Oak Harbor, Ohio
 Hess & Clark, Inc., 7th & Orange Sts., Ashland, Ohio
 Heterochemical Corp., 111 E. Hawthorne Ave., Valley Stream, N. Y.
 Hi-Life Packing Co., 431 S. Dearborn St., Chicago 5, Ill.
 H. P. Hood & Sons, Inc., 500 Rutherford Ave., Boston 29, Mass.
 H. P. Hood & Sons, Dunedin, Florida
 E. C. & W. L. Hopkins, Inc., Greenfield, N. H.
 House of Houston, Inc., 4135 Laguna St., Coral Gables, Florida
 Hubinger Co., 601 Main St., Keokuk, Iowa

Illinois Cereal Mills, Inc., South Jefferson Ave., Paris, Ill.
Independent Tallow Co., 39 Cedar St., Woburn, Mass.
Industrial Molasses Corp., 3033 Excelsior Blvd., Minneapolis 16, Minn.
International Milling Co., 1200 Investors Bldg., Minneapolis, Minn.
International Minerals & Chemical Corp., 20 North Wacker Drive, Chicago 6, Ill.
International Salt Co., Inc., P. O. Drawer 511, Scranton 2, Penn.
International Stock Food Corp., 59 Main St., Delhi, N. Y.

Jaquith & Co., Inc., 305 Main St., Woburn, Mass.

Kasco Mills, Div. of St. Albans Grain Co., Inc., R.D. 2, Waverly, N. Y.
Kellogg Sales Co., Feed Dept., 235 Porter St., Battle Creek, Mich.
Spencer Kellogg & Sons, Inc., 98 Delaware Ave., Buffalo 2, N. Y.
Kennel Food Supply Div., Hygrade Food Products Corp., 63 Mill Hill Ter., Fairfield, Conn.
Keystone Chemurgic Corp., R.D. No. 1, Bethlehem, Penn.
Keystone Dehydrators, Box 204, Nazareth, Penn.
H. C. Knoke & Co., 5728 West Roosevelt Road, Chicago 50, Ill.
Kraft Foods Co., 99 Park Ave., New York 16, N. Y.
Chas. A. Krause Milling Co., 404 East State St., Milwaukee 1, Wis.
Kronick's Coal & Grain Co., 43 Pleasant St., Adams, Mass.
Kuder Pulp Sales Co., Lake Alfred, Florida

Lake States Yeast Corp., 603 W. Davenport St., Rhinelander, Wis.
Lauhoff Grain Co., 321 E. North St., Danville, Ill.
Lauhoff Soya Co., P. O. Box 571, Danville, Ill.
Libby, McNeill & Libby, 4134 South Packers Ave., Chicago 9, Ill.
Libner Grain Co., Inc., 25 Commerce St., Norwalk, Conn.
Limestone Products Corp. of America, 122 Main St., Newton, N. J.
L. B. Lovitt & Co., 314 Cotton Exchange Bldg., Memphis, Tenn.

Mansfield Milling Co., Mansfield, Mass.
Marine Products Co., 345 W. First St., Boston, Mass.
Maple Leaf Milling Co., Ltd., Toronto, Ont., Canada
Maritime Milling Co., Inc., 100 South Elmwood Ave., Buffalo 2, N. Y.
Marvin Grain & Hardware Co., 31 Cove Road, South Dartmouth, Mass.
McCabe Grain Co., Ltd., 409 Grain Exchange Bldg., Winnipeg, Manitoba, Canada
McMillen Feed Mills, Div. of Central Soya Co., Inc., 300 Ft. Wayne Bank Bldg., Fort Wayne 2, Indiana.

The Mennel Milling Co., 1712 Toledo Trust Bldg., Toledo 4, Ohio
Merchants Creamery Co., 536 Livingston St., Cincinnati 14, Ohio
Merck & Co., Inc., Rahway, N. J.
Merrimack Farmers' Exchange, Inc., Low Ave., Concord, N. H.
Miller Alfalfa Co., Jackson & Gorman Sts., Defiance, Ohio
Miner-Hillard Milling Co., 826 Second National Bank Bldg., Wilkes-Barre, Penn.
Minute Maid Corp., Florida Specialty Products Div., P. O. Box 720, Leesburg, Florida
Geo. Q. Moon & Co., Inc., 201 Chenango St., Binghamton, N. Y.
Jas. F. Morse & Co., 11 Horace St., Somerville 43, Mass.
Morton Salt Co., 120 South LaSalle St., Chicago 3, Ill.
Mowat, Wilson & Co., 18675 James Couzens Highway, Detroit 35, Mich.
Myzon, Inc., 3120 W. 47th St., Chicago 32, Ill.

National Alfalfa Dehydrating & Milling Co., 101 South 4th St., Lamar, Col.
National Biscuit Co., 449 West 14th St., New York 14, N. Y.
National Biscuit Co., Toledo Mill, P. O. Box 1528 Central St., Toledo 3, Ohio
National Dairy Products Corp., 99 Park Ave., New York 16, N. Y.
National Distillers and Chemical Corp., 99 Park Ave., New York 16, N. Y.
National Vitamin Products Co., 3401 Hiawatha Ave., South, Minneapolis 6, Minn.
New Century Co., 3939 S. Union St., Chicago 9, Ill.
Nitrogen Div., Allied Chemical & Dye Corp., P. O. Drawer 61, Hopweell, Va.
Nopco Chemical Co., 1st & Essex Sts., Harrison, N. J.
The North American Trading & Import Co., 1429 Walnut St., Philadelphia 2, Penn.
Northern Ohio Sugar Co., Special Products Div., 1530 Sixteenth St., Denver, Col.

- Ogden Grain Co., Wurz Ave., Utica, N. Y.
 Ogilvie Flour Mills Co., Ltd., Ft. William, Ontario, Canada
 Old Mother Hubbard Dog Food Co., Inc., 40-44 Prospect St., Gloucester, Mass.
 Orleans Dog Candy Co., 431 South Dearborn St., Chicago 5, Ill.
- Pabst Brewing Co., Merchandise Mart, Chicago 54, Ill.
 Park & Pollard Co., Inc., 100 South Elmwood Ave., Buffalo 2, N. Y.
 George H. Parker Grain Co., 56 Water St., Danvers, Mass.
 Pasco Packing Co., Dada City, Florida
 Patent Cereals Co., 13-55 Bradford St., Geneva, N. Y.
 Penick & Ford Ltd., Inc., Cedar Rapids, Iowa
 Chas. Pfizer & Co., Inc., 11 Bartlett St., Brooklyn 6, N. Y.
 Philadelphia Seed Co., Inc., P. O. Box 934, Philadelphia 5, Penn.
 Pillsbury Mills, Inc., Minneapolis 2, Minn.
 Pup Corn Brands, 690 Osgood Ave., New Britain, Conn.
 Publicker Industries, Inc., 1429 Walnut St., Philadelphia, Penn.
- Quaker Oats Co., Merchandise Mart Plaza, Chicago 54, Ill.
- Ralston Purina Co., 835 South Eighth St., St. Louis 2, Mo.
 John Reardon & Sons Div. of Wilson & Co., Inc., 51 Waverly St., Cambridge, Mass.
 Redbird Farm, Inc., Wrentham, Mass.
 D. F. Riley, P. O. Box A, Hatfield., Mass.
 Rudhard Products, Inc., 248 Michigan Ave., Buffalo 3, N. Y.
 Russell-Miller Milling Co., 860 Grain Exchange, Minneapolis 15, Minn.
- Salada, Shirriff-Horsey Inc., Plant City, Florida
 Schenley Distillers, Inc., 350 Fifth Ave., New York 1, N. Y.
 Schoeneck Farms, Inc., R.D. No. 3, Nazareth, Penn.
 Sea Board Supply Co., 35th & Grays Ferry Ave., Philadelphia 46, Penn.
 Jos. F. Seagram & Sons, Inc., Box 240, Louisville, Ky.
 Sherwin-Williams Co., 101 Prospect Ave., N.W., Cleveland, Ohio
 Silmo Chemical Corp., Box 352, Vineland, N. J.
 W. J. Small Co., Div. of Archer-Daniels-Midland Co., P.O. Box 356, Kansas City 41, Mo.
 Allen V. Smith, Inc., Marcellus Falls, N. Y.
 Harold E. Smith Co., E. High St., Avon, Mass.
 J. H. Smith Grain, Inc., Haverhill, Mass.
 Southern Fruit Distributors, Inc., P. O. Box 671, Orlando, Florida
 Spratt's Patent (America) Ltd., 18 Congress St., Newark 5, N. J.
 E. R. Squibb & Sons, 460 Park Ave., New York 22, N. Y.
 Stabilized Vitamins, Inc., 57-59 Commerce St., Brooklyn 31, N. Y.
 A. E. Staley Manufacturing Co., Eldorado & 22nd Sts., Dacatur, Ill.
 Standard Brands, Inc., Special Products Div., 625 Madison Ave., New York 22, N. Y.
 Standard Brands, Inc., Pet Food Div., 625 Madison Ave., New York 22, N. Y.
 Standard Milling Co., 1009 Central St., Kansas City, Mo.
 F. W. Stock & Sons, Inc., E. Beacon St., Hillsdale, Mich.
 Sturdy Dog Food Co., 2103 West Genesee St., Syracuse, N. Y.
 Suni-Citrus Products Co., Cocke & Co., Agents, 208 William-Oliver Bldg., Atlanta, Ga.
 Sunshine Biscuits, Inc., 29-10 Thompson Ave., Long Island City, N. Y.
 Sunshine Biscuits, Inc., Milling Division, Mechanic St., Grafton, Ohio
 Swift & Co., P. O. Box 110, Fostoria, Ohio
 Swift & Co., Pard Dept., Union Stock Yards, Chicago 9, Ill.
- Taft Bros., Uxbridge, Mass.
 Tioga Mills, Inc., Box 150, Waverly, N. Y.
 Treesweet Products Co., P. O. Box 72, Ft. Pierce, Florida
 Tropicana Products, Inc., P. O. Box 338, Brandenton, Florida
 Tryzol Products Co., Inc., 3129 W. 47th St., Chicago 32, Ill.
- Union Sales Corp., Columbus, Ind.
 Union Starch & Refining Co., 301 Washington St., Columbus, Ind.
 United Co-Operative Farmers, Inc., 339 Broad St., Fitchburg, Mass.
 Unity Feeds, Inc., 177 Milk St., Boston, Mass.
 George Urban Milling Co., 332 North Oak St., Buffalo 3, N. Y.
 U. S. Industrial Chemicals Co., Div. of National Distillers Products Corp., 99 Park Ave., New York 16, N. Y.

Ventura Grain Co., 7 Purchase St., Taunton, Mass.
Victor Chemical Works, Chicago, Ill.

Hiram Walker & Sons, Inc., Foot of Edmund St., Peoria, Ill.
C. P. Washburn Co., Cambridge St., Middleboro, Mass.
H. K. Webster Co., 24 West St., Lawrence, Mass.
Western Condensing Co., Box 739, Appleton, Wis.
Whitmoyer Laboratories, Inc., 19 North Railroad St., Myerstown, Penn.
Wilson & Co., Inc., 4200 S. Marshfield Ave., Chicago 9, Ill.
Wilson's Corn Products, Inc., East Fourth St., Rochester, Ind.
Winter Garden Citrus Products Cooperative, P. O. Box 399, Winter Garden, Florida
Wirthmore Feed Co., Concord, N. H.
Wirthmore Feeds, Inc., 343 Winter St., Waltham 54, Mass.
Wirthmore Grain Co., 15 Harrison Ave., Taunton, Mass.

Yieldmor Feeds, Inc., 101 South Downing St., Piqua, Ohio

Inspection of Commercial Fertilizers and Agricultural Lime Products

by

Fertilizer Control Service Staff

Massachusetts Agricultural Experiment Station

94-347 1959



This is the eighty-fifth report of the Massachusetts Fertilizer Control Board made in accordance with Chapter 94, Sections 250 to 261, inclusive, of the Massachusetts General Laws 1920, as amended by Chapter 67, Acts of 1933.

INSPECTION OF COMMERCIAL FERTILIZERS AND AGRICULTURAL LIME PRODUCTS FOR THE SEASON OF 1958

BY FERTILIZER CONTROL SERVICE STAFF

John W. Kuzmeski, *Research Professor, Official Chemist*
Albert F. Spelman, *Associate Research Professor*
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David F. Owen, Jr., *Research Instructor*
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Joseph Conklin, *Inspector*
Edward F. Vlach, *Technical Assistant*
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Doris A. Kennedy, *Senior Clerk and Stenographer*

PERTINENT FACTS RELATING TO MASSACHUSETTS FERTILIZER LAW

Commercial Fertilizers

Registration is required annually on January 1.

Registration fee is \$8 for each element: nitrogen, phosphoric acid, potash, and magnesia.

Label must show:

Net weight of fertilizer

Name, brand or trade mark, and grade

Name and address of manufacturer

Guaranteed analysis: nitrogen, available phosphoric acid, water soluble potash. A guarantee of total phosphoric acid may be used instead of available phosphoric acid for bone, untreated phosphate rock, tankage, dried and pulverized manures, ground seeds, and wood ashes.

Tonnage reports are required semiannually, on January 1 and July 1.

Lime Products

Registration is required annually on January 1.

Registration fee: \$12 for each brand.

Label must show:

Net weight of product

Name, brand or trade mark, and form of lime

Name and address of manufacturer

Guaranteed analysis: calcium oxide, magnesium oxide, carbonates of calcium and magnesium, or calcium sulfate (in gypsum or land plaster)

Make checks payable to Massachusetts Agricultural Experiment Station and send correspondence to

JOHN W. KUZMESKI
Massachusetts Agricultural Experiment Station
Amherst, Mass.

FERTILIZER TONNAGE

Tonnage of Fertilizer Sold in Massachusetts

	1957		1958
	Jan. 1 to July 1	July 1 to Dec. 31	Jan. 1 to July 1
Mixed fertilizers.....	55,312	12,239	56,686
Fertilizer chemicals and materials unmixed....	10,658	5,468	10,449
Pulverized animal manures...	1,322	480	1,658
Totals.....	67,292	18,187	68,793

Tonnage of Mixed Fertilizers, January 1, 1957 to July 1, 1958

Grade*	TONNAGE			Brands
	1957	1957	1958	
	Jan. 1 to July 1	July 1 to Dec. 31	Jan. 1 to July 1	
5-10-10.....	14,048	2,153	13,021	46
10-10-10.....	8,120	2,388	10,259	26
8-16-16.....	4,032	1,472	4,521	20
5-8-7.....	4,109	327	3,216	20
6-10-4.....	2,579	314	2,872	17
7-7-7.....	3,238	547	2,593	27
8-6-2.....	1,291	374	2,392	19
5-10-5.....	2,084	374	2,141	48
8-6-4.....	1,339	652	1,894	11
10-5-5.....	765	223	1,252	9
8-12-12.....	1,391	89	1,240	12
6-3-6.....	3,584	43	1,050	15
6-12-12.....	820	96	977	5
0-15-30.....	922	541	960	17
10-6-4.....	456	183	816	21
4-12-16.....	271	97	419	6
0-20-20.....	376	157	237	16
0-8-8.....	966	—	—	5
8-8-8.....	686	46	—	5
9-7-4.....	398	14	—	3
Miscellaneous.....	3,837	2,147	6,826	—
Totals.....	55,312	12,239	56,686	348

Tonnage of Unmixed Materials, January 1, 1957 to July 1, 1958

Material	TONNAGE			Brands
	1957	1957	1958	
	Jan. 1 to July 1	July 1 to Dec. 31	Jan. 1-July 1	
Processed tankage & activated sewage.....	4,076	1,579	4,359	46
Superphosphate.....	2,141	1,260	1,786	32
Pulverized animal manures...	1,322	480	1,658	44
Cottonseed meal.....	1,030	1,012	815	6
Ammonium nitrate.....	995	442	808	8
Bone meal.....	424	212	536	33
Nitrate of soda.....	548	266	503	12
Muriate of potash.....	457	150	387	21
Sulfate of ammonia.....	99	47	336	19
Castor pomace.....	202	158	325	4
Cyanamid.....	37	255	255	10
Urea.....	134	33	105	10
Urea formaldehyde.....	26	—	46	8
Miscellaneous.....	219	272	188	—
Totals.....	11,980	5,948	12,107	253

*The grade represents the plant food guarantee and is expressed in the order of nitrogen, available phosphoric acid, and potash.

MIXED FERTILIZERS

Deficiency Statistics for Mixed Fertilizers

Manufacturer	Number of Samples		Number of Tests				
	Analyzed	With No Deficiencies	Totals	Less than $\frac{1}{4}$ Per Cent Below Guarantee	Between $\frac{1}{4}$ and $\frac{1}{2}$ Per Cent Below Guarantee	Between $\frac{1}{2}$ and $\frac{3}{4}$ Per Cent Below Guarantee	More than $\frac{3}{4}$ Per Cent Below Guarantee
Agricultural Products...	3	1	9	0	1	0	1
American Agricultural Chemical Co...	79	50	239	8	15	4	5
Armour Fertilizer Works	27	15	80	3	5	3	1
Atlas Fish Fertilizer Co.	1	1	3	0	0	0	0
F. A. Bartlett Tree Expert Co.....	1	0	3	0	1	0	0
Jos. Breck & Sons Corp.....	4	2	13	1	0	0	1
Carac Corp.	1	0	3	0	0	0	2
Carbola Chemical Co., Inc.....	1	1	3	0	0	0	0
Chesnicka Landscape Service.....	2	1	6	1	0	0	0
Clinton Nurseries.....	2	2	6	0	0	0	0
Consolidated Rendering Co.	39	23	114	8	6	3	1
Davison Chemical Co.....	6	2	16	0	4	1	1
Doggett & Pfeil Co.....	3	1	8	1	0	0	2
Doughten Seed Co.....	1	1	3	0	0	0	0
E. I. duPont de Nemours & Co.....	1	1	3	0	0	0	0
Eastern States Farmers Exchange.....	23	10	85	5	3	1	5
Essex County Coop. Farming Association.....	4	3	14	0	1	0	0
Faesy & Besthoff, Inc.....	7	6	21	0	0	0	1
Farm Bureau Association.....	9	6	29	1	2	0	1
Forward House Div. Olin Mathieson Chemical Corp.....	1	0	3	0	0	0	1
Frost & Higgins Co.....	1	0	3	1	0	0	0
Garfield Williamson, Inc.....	1	1	3	0	0	0	0
G. D. Garden Products Co.....	1	1	3	0	0	0	0
General Chemicals Co.....	1	0	3	1	0	0	0
Glorion Div., Aluminum & Chemical Corp.	1	0	3	0	0	1	0
Goulard & Olena, Inc.,	6	3	18	0	1	0	2
A. H. Hoffman, Inc.,	2	2	6	0	0	0	0
Hubbard Hall Chemical Co....	35	34	107	0	1	0	0
Hydroponic Chemical Co., Inc.....	2	2	6	0	0	0	0
Hy-Trous Corp.....	1	0	3	0	1	0	0
International Minerals & Chemical Corp.	36	21	142	6	9	2	0
Kapco Div., Summers Fertilizer Co....	1	0	3	0	0	0	1
K & K Fertilizer Service.....	7	4	21	2	1	0	0
Lee Patten Seed Co.....	1	1	3	0	0	0	0
Lexington Gardens, Inc.....	1	1	3	0	0	0	0
John D. Lyon, Inc.....	4	4	12	0	0	0	0
Old Fox Agricultural Sales, Inc.....	19	10	59	6	3	0	1
Parks-Barnes, Inc.,	2	2	6	0	0	0	0
Penn Co.....	1	1	3	0	0	0	0
Plantabbs Corp.....	1	1	3	0	0	0	0
Plant Products Corp.....	1	0	3	1	0	0	0
Ra-Pid-Gro Corp.....	1	1	3	0	0	0	0
Rose Manufacturing Co.....	1	1	3	0	0	0	0
O. M. Scott & Sons Co.....	3	2	9	1	1	0	0
Sears, Roebuck & Co.....	7	3	21	2	1	1	0
M. L. Shoemaker Co.....	1	1	2	0	0	0	0
Stim-U-Plant Laboratories, Inc.....	2	2	6	0	0	0	0
Swift & Co.....	7	5	21	0	1	0	1
Taft Oil Co.....	1	1	3	0	0	0	0
Universal Chemical Co.....	5	3	15	0	0	0	2
Valley Feed & Supply Co., Inc.....	1	1	3	0	0	0	0
Winslow Nurseries, Inc.....	2	2	6	0	0	0	0
Totals.....	371	236	1166	48	57	16	29

EXPLANATION OF TABLE OF ANALYSES

Guarantee. The plant food guarantee or the grade of each fertilizer is made a part of the trade name under the heading "Name of Manufacturer and Brand" and is expressed as nitrogen, available phosphoric acid, and water soluble potash in that order.

Mixtures Substantially Complying with the Guarantee. In addition to those fertilizers that meet their guarantees in every respect, this table includes also a list of those mixtures that have one or more elements below the guaranteed percentage but have a shortage of less than \$1 per ton.

This table, in addition to the data mentioned in the next paragraph, contains only results of analytical tests pertaining to the average amount of water insoluble nitrogen present in some brands, since this information is of value to tobacco growers and other users of fertilizers containing a high percentage of this form of nitrogen.

Potash Forms. Tests for chlorine are made only on tobacco mixtures and on those fertilizers that carry a guarantee of potash in forms other than muriate. When the amount of chlorine present in any brand exceeds the tolerance allowed for that brand, this fact is indicated by a footnote.

Mixtures Showing a Commercial Shortage of \$1 or More per Ton

Manufacturer and Brand	Nitrogen Found		Available Phosphoric Acid Found	Water Soluble Potash (K ₂ O) Found	Approximate Commercial Shortage per Ton
	Water Insoluble Organic	Total			
Agricultural Products Co.					
Apco Rose Food 5-12-4.....	69	2.85 ^{1a}	13.80	4.50	1
The American Agricultural Chemical Co.					
AA Quality 0-15-30... (2)	—	—	16.10	28.20	\$1.80
4-12-16..... (2)	—	4.17	12.60	14.66 ^a	1.14
4-12-16..... (2)	—	6.55 ^b	10.70 ^a	13.35 ^a	*
4-12-16..... (2)	—	6.42 ^b	11.10 ^a	14.60 ^a	*
AA Quality 8-6-2..... (2)	—	6.84 ^a	8.60	4.22	2.90
8-6-2..... (2)	—	4.56 ^a	11.40 ^b	14.00 ^b	*
8-6-2..... (2)	—	4.63 ^a	12.10 ^b	15.54 ^b	*
10-10-10..... (2)	—	6.72 ^a	10.20	10.33	
Armour Fertilizer Works					
Armour Vertagreen Plant Food 8-8-8.... (2)	—	6.87	9.90	8.49	3.39
Joseph Breck & Sons					
Breck's Quick Life 16-32-16 ..	—	16.07	27.40 ^a	17.19	1
Carac Corp.					
Carac Evergreen & Shrub Fertilizer 25-14-18	—	38.89	5.10	6.80	1
Consolidated Rendering Co.					
Coreenco 0-15-30.... (2)	—	1.98	14.26***	24.00***	6.00
Davison Chemical Co.					
Davco 0-15-30.....	—	—	13.38	31.20	2.92
Davco 8-16-16.....	—	8.00	15.25	15.60	1.60
Doggett-Pfeil Co.					
XL 60-15-30-15.....	—	13.79	25.90	23.60	1
Kapco Div. of the Summers Fertilizer Co.					
Kapco Liquid Fertilizer 15-30-15.....	—	18.15	30.20	12.80	1
Old Fox Agricultural Sales, Inc.					
Old Fox Brand 8-16-16.....	—	7.83	15.08	16.80	1.18
Swift & Co.					
Instant Vigoro 19-28-14.....	—	20.63	24.20	17.50	1
Universal Chemical Co.					
Liquid M 17-23-17.....	—	15.97	23.50	17.70	3.00
Liquid M 17-23-17.....	—	15.94	23.10	17.19	3.18

¹ Because these are small package fertilizers, it is not feasible to calculate commercial shortage per ton.

^a Seriously deficient.

^b Above guarantee.

* Mislabeled. Lot was delivered to State institution and was replaced.

** Lot delivered to State institution and was replaced.

*** Deficient in available phosphoric acid and potash. This product obviously contains ingredients containing nitrogen.

(2) See table of "Mixtures Substantially Complying with Guarantees."

Mixtures Substantially Complying with Guarantees

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentag of Water Insoluble Nitrogen
Agricultural Products Co.		
Apco Plant Food 5-10-5.....	1	—
Apco Special 8-6-4 High Organic Lawn Fertilizer.....	1	.80
The American Agricultural Chemical Co.		
AA Fertilizer 0-15-30.....	1 <i>c</i>	—
AA Fertilizer 0-20-20.....	2	—
AA Fertilizer 4-12-16.....	7 <i>c</i>	—
AA Fertilizer 5-10-5.....	4	—
AA Fertilizer 5-10-10.....	4	—
AA Fertilizer 5-10-10, 2% Magnesium oxide.....	3	—
AA Fertilizer 8-6-2.....	8 <i>c</i>	—
AA Fertilizer 8-6-2.....	1 <i>c</i>	.10
AA Fertilizer 8-12-12.....	1	—
AA Fertilizer 8-16-16.....	2	—
AA Fertilizer 10-10-10.....	5 <i>c</i>	—
Agrico for N. E. 5-8-7.....	3	—
Agrico Bulb Food 5-9-6.....	1	—
Agrico Rose Food 5-9-6.....	1	1.75
Agrico for Gardens 5-10-5.....	3	—
Agrico 5-10-10, 2% Magnesium oxide.....	3	—
Agrico for Tobacco 6-3-6.....	1 <i>a</i>	2.78
Agrico for Turf 6-8-2.....	1	2.09
Agrico for Turf 6-8-2.....	1	2.13
Agrico for Turf 6-8-2.....	1	2.02
Agrico Country Club 6-10-4.....	1	.41
Agrico Country Club 6-10-4.....	1	.42
Agrico for Broadleaf Evergreens 6-10-4.....	1	.68
Agrico for Broadleaf Evergreens 6-10-4.....	1 <i>b</i>	.32
Agrico for Top Dressing 7-7-7.....	2	—
Agrico Country Club 8-6-4.....	1	1.41
Agrico Country Club 8-6-4.....	1	1.55
Agrico for N. E. 8-12-12.....	2	—
Agrico for Turf 10-6-4.....	1	3.67
Agrico for Turf 10-6-4.....	1	3.82
Agrico for Turf 10-6-4.....	1	4.07
Agrico for Turf 10-6-4.....	1	3.33
Agrico for Turf 10-6-4.....	1	3.45
Agrico for Top Dressing 10-10-10.....	3	—
Armour Fertilizer Works		
Armour's Big Crop 0-15-30.....	1	—
Armour's Big Crop 0-20-20.....	1	—
Armour's Big Crop 5-8-7.....	3	—
Armour's Big Crop 5-10-10.....	2	—
Armour's Big Crop 7-7-7.....	1	—
Armour's Big Crop 8-16-16.....	1	—
Armour's Big Crop 10-10-10.....	1	—
Armour's Gold Bond Tobacco Grower 6-3-6.....	1 <i>a</i>	2.73

a Potash in forms other than muriate.

b Mislabelled. Apparently a 5-8-7 grade.

See table of "Mixtures showing a commercial shortage of \$1 or more per ton."

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Armour Fertilizer Works—Continued		
Armour's Gold Bond Tobacco Grower 6-3-6.....	1 a	2.75
Armour's Gold Bond Tobacco Grower 6-3-6.....	1 a	2.23
Armour's Vertagreen Plant Food 5-10-5.....	3	—
Armour's Vertagreen Camellia, Gardenia, Azalea, Rhododendron, Holly 5-10-10.....	1	—
Armour's Vertagreen Plant Food for Commercial Crops 5-10-15.....	1	—
Armour's Vertagreen Complete Plant Food for Commercial Crops 6-4-7.....	1 a	.95
Armour's Vertagreen Plant Food 6-12-6.....	1	—
Armour's Vertagreen Plant Food for Commercial Crops 6-12-12.....	2	—
Armour's Vertagreen Turf Maker 8-6-2.....	1	3.95
Armour's Vertagreen Turf Maker 8-6-2.....	1	3.88
Armour's Vertagreen Plant Food 8-8-8.....	1 c	—
Armour's Vertagreen Plant Food for Turf & Trees 10-6-4.....	1	1.60
Atlas Fish Fertilizer Co.		
Atlas Fish Emulsion Fertilizer 5-1-1.....	1	—
F. A. Bartlett Tree Expert Co.		
Bartlett Green Tree Food 6-8-6.....	1	.85
Joseph Breck & Sons		
Breck's Garden Gro 5-10-10, 2% Magnesium oxide.....	1	—
Breck's Turf-Gro 8-6-2.....	1	1.65
Breck's Velturf 10-6-4.....	1	7.56
Carbola Chemical Co., Inc.		
CCC Triple 20 Plant Food 20-20-20.....	1	—
Chesnicka Landscape Service		
Chesnicka Sod Builder with Chlordane 9-7-4.....	1	2.69
Chesnicka Sod Builder with Chlordane 9-7-4.....	1	2.47
Clinton Nurseries.		
African Violet Food 5-12-9.....	1	.13
New Era Vitamin Plant Food 7-15-8.....	1	.15
Consolidated Rendering Co.		
Corenco 0-15-30.....	1 c	—
Corenco 0-20-20.....	1	—
Corenco 4-12-16.....	1	—
Corenco 5-8-7.....	2	—
Corenco Home Garden Fertilizer 5-10-5.....	3	—
Corenco Rose Special 5-10-5.....	1	2.00
Corenco 5-10-5.....	3	—
Corenco 5-10-10.....	2	—
Corenco 6-3-6 Perfection Tobacco Grower.....	1 a	3.53
Corenco 7-7-7.....	4	—
Corenco Rhododendron, Azalea & Blueberry Special 7-7-7.....	1	.20
Corenco 8-6-4.....	1	—
Corenco 8-6-4 Landscape.....	1	.69

a Potash in forms other than muriate.

c See table of "Mixtures showing a commercial shortage of \$1 or more per ton."

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Consolidated Rendering Co.—Continued		
Corenco 8-6-4 Turf Green.....	1	2.44
Corenco 8-6-4 Turf Green.....	1	3.24
Corenco 8-6-4 Turf Green.....	1	2.33
Corenco 8-16-16.....	8	—
Corenco 10-6-4.....	1	.20
Corenco 10-6-4.....	1	.21
Corenco 10-6-4 Golf & Lawn Special.....	1	.88
Corenco 10-10-10.....	2	—
Davison Chemical Co.		
Davco 0-20-20.....	1	—
Davco Turf & Garden Food 5-10-5.....	1	—
Davco 5-10-10.....	2	—
Dogget & Pfeil Co.		
XL 36 12-12-12.....	1	—
XL 40 20-0-20.....	1	—
Doughton's Seed Co.		
Doughton's Lawn Food 9-8-3.....	1	1.59
E. I. duPont deNemours & Co.		
Du Pont Soluble Plant Food 19-22-16.....	1	—
Eastern States Farmers' Exchange, Inc.		
Eastern States 0-15-30 with Boron 0.2%.....	2	—
Eastern States 0-25-25.....	1	—
Eastern States 5-10-10, 2% Magnesium oxide.....	1	—
Eastern States 5-10-10, 2% water soluble Magnesium oxide.....	3	—
Eastern States 8-12-12, 2% Magnesium oxide.....	1 a	—
Eastern States 8-16-16, 1% Magnesium oxide.....	4	—
Eastern States 10-5-5 Greenlawn, 2% Magnesium oxide.....	1	4.62
Eastern States 10-5-5 Greenlawn, 2% Magnesium oxide.....	1	4.52
Eastern States 10-5-5 Greenlawn, 2% Magnesium oxide.....	1	4.55
Eastern States 10-10-10, 1% Magnesium oxide.....	6	—
Eastern States 10-10-10, 2% Magnesium oxide.....	1 a	—
Eastern States Start & Grow 16-32-16.....	1	—
Essex County Cooperative Farming Ass'n.		
S-X Brand 5-8-7.....	1	—
S-X Brand 5-10-10, 1% water soluble Magnesium oxide.....	1	—
S-X Brand 5-10-10, 2% water soluble Magnesium oxide.....	1	—
S-X Brand 7-7-7.....	1	—
Faesy & Besthoff, Inc.		
F & B Tomato Food 4-12-12.....	1	—
F & B Azalea, Camelia & Rhododendron Food 5-10-10.....	1	1.32
F & B Broadleaf High Organic 6-10-4.....	1	1.50
F & B Evergreen Food 7-7-7.....	1	2.59
F & B Rose Food 8-10-4.....	1	2.97
F & B Rose Food 8-10-4.....	1	2.20
F & B Starter & Grower 15-30-15.....	1	—

a Potash in forms other than muriate.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Farm Bureau Ass'n.		
Farm Bureau 5-10-10.....	1	—
Farm Bureau 5-10-10, 2% Magnesium oxide.....	2	—
Farm Bureau 8-6-2.....	1	1.60
Farm Bureau 8-6-2.....	1	1.29
Farm Bureau 8-16-16.....	1	—
Farm Bureau 10-10-10.....	3	—
Forward House Div., Olin Mathieson Chemical Corp.		
Plantrons 12-24-12.....	1	—
Frost & Higgins Co.		
Special Organic Fertilizer 8-6-4.....	1	2.85
G. D. Garden Products, Inc.		
Green D 10-6-4.....	1	4.51
Garfield Williamson, Inc.		
Wonderlawn Lawn Food 10-6-4.....	1	1.50
General Chemical Co.		
Planter's Punch A-Z.....	1 c	—
Glorion Div., Aluminum & Chemical Corp.		
Glorion 4-8-8.....	1	—
Goulard & Olen, Inc.		
G & O Tomato Food 3-12-13.....	1	—
G & O Rhododendron, Azalea, Camelia Food 3-20-3.....	1	.85
G & O Special Food for Bulbs 5-6-15.....	1	1.58
G & O Prizegrow 5-10-5.....	1	—
G & O Rose Food 7-8-5.....	1	.62
G & O Evergreen Tree & Shrub Food 9-7-4.....	1	—
A. Hoffman, Inc.		
Hoffman Azalea & Evergreen Food 4-6-10.....	1	1.60
Hoffman Rose Food 5-10-5.....	1	1.07
The Hubbard-Hall Chemical Co.		
Liberty 0-15-30.....	1	—
Liberty 0-20-20.....	1	—
Liberty 5-8-7.....	4	—
Liberty 5-10-5.....	2	—
Liberty 5-10-10.....	3	—
Liberty 5-10-10, 2% Magnesium oxide (Sulphate Potash).....	1 a	—
Liberty 6-3-6 Tobacco.....	1 a	3.13
Liberty 6-3-6 Tobacco.....	1 a	3.13
Liberty 6-4-7 Super Bacco.....	1 a	3.15
Liberty 6-8-8 Super Speed Special Fertilizer.....	1	—
Liberty 6-8-8, 2% Magnesium oxide (Sulphate Potash).....	1 a	—
Liberty 7-7-7.....	5	—
Liberty 8-6-4.....	1	1.17

a Potash in forms other than muriate.

c Chlorine content excessive.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentag of Water Insoluble Nitrogen
Hubbard-Hall Chemical Co.—Continued		
Liberty 8-6-4.....	1	1.00
Liberty 8-6-4.....	1	.73
Liberty 8-10-10 New Super Speed Potato Fertilizer, 2% Magnesium oxide.....	1	—
Liberty 8-12-12, 2% Magnesium oxide.....	1	—
Liberty 8-16-16.....	2	—
Liberty 10-10-10.....	3	—
Old Deerfield 8-6-4 Greenlawn.....	1	1.68
Old Deerfield 10-10-10.....	1	—
Woodruff's Lawn & Tree Food 10-5-5.....	1	—
Hydroponic Chemical Co., Inc.		
Hyponex 7-6-19.....	2	—
Hy Trous Corp.		
Hy Trous 4-8-4.....	1	—
International Minerals & Chemical Corp.		
Fertilis 5-10-5, 2% Magnesium oxide, Home Garden.....	2	—
Fertilis Plant Food 8-6-2, 1% Magnesium oxide.....	1	1.22
Fertilis Plant Food 8-6-2, 1% Magnesium oxide.....	1	1.60
Fertilis 8-6-2, 1% Magnesium oxide.....	1	1.5
Fertilis 8-6-2, 1% Magnesium oxide.....	1	1.29
Fertilis 8-6-2, 1% Magnesium oxide.....	1	1.01
International 4-12-16, 1% Magnesium oxide.....	2	—
International 5-8-7, 1% Magnesium oxide.....	4	—
International 5-10-5, 1% Magnesium oxide.....	2	—
International 5-10-10, 1% Magnesium oxide.....	6	—
International 5-10-10, 2% water soluble Magnesium oxide, Potato .	1	—
International 5-10-10, 2% water soluble Magnesium oxide, Rainbow	2	—
International 6-12-12, 2% water soluble Magnesium oxide, Rainbow	1	—
International 7-7-7, 1% Magnesium oxide.....	2	—
International 8-12-12, 2% Magnesium oxide, Rainbow.....	2	—
International 8-16-16.....	1	—
International 10-10-10.....	1	—
International 10-10-10, 1% Magnesium oxide.....	4	—
International 10-10-10, 5% water soluble Magnesium Oxide, Rainbow	1	—
K & K Fertilizer Service		
Arrow 5-10-10.....	1	—
Formula K 5-10-10, 2% Magnesium oxide.....	2	—
Blue Star Tobacco Fertilizer 6-3-6.....	1 ^a	3.40
Triple 7 Plant Food 7-7-7.....	3	—
Pioneer Plant Food 8-6-4.....	1	.66
Lee Patten Seed Co.		
Patco Lawn Food 9-8-3.....	1	1.61
Lexington Gardens, Inc.		
Bu-T-Gro 3-6-3.....	1	—

^a Potash in form other than muriate.

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
John D. Lyon, Inc.		
Lyon Old New England 6-8-3.....	1	4.01
Lyon Old New England 6-8-3.....	1	4.83
Lyon Old New England 6-8-3.....	1	5.82
Lyon Old New England 6-8-3.....	1	5.31
Old Fox Agricultural Sales, Inc.		
Old Fox Brand 5-8-7.....	3	—
Old Fox Brand 5-10-5 Garden Food.....	3	—
Old Fox Brand 5-10-10, 2% Magnesium oxide.....	2	—
Old Fox Brand 6-3-6, 2% Magnesium oxide.....	1	3.00
Old Fox Brand 6-10-6 For Acid Soil Plants.....	1	.19
Old Fox Brand 7-7-7.....	3	—
Old Fox Brand 8-6-2 Turf Food.....	1	1.65
Old Fox Brand 8-6-2 Turf Food.....	1	1.08
Old Fox Brand 8-6-2 Turf Food.....	1	1.70
Old Fox Brand 8-6-2 Turf Food.....	1	1.02
Old Fox Brand 10-10-10.....	1	—
Parks Barnes, Inc.		
Black Magic Violet Blossom Booster 4-10-10.....	1	—
Black Magic Liquid Fertilizer 10-5-5.....	1	—
Penn Co.		
Ferti-Flour 3-3-3.....	1	—
Plantabbs Corp.		
Plantabbs 11-15-20.....	1	—
Ra-Pid-Gro Corp.		
Ra-Pid-Gro 23-21-17.....	1	—
The Rose Manufacturing Co.		
Tri-Ogen Rose Food 5-10-5.....	1	.16
O. M. Scott & Sons, Co.		
Scott's Organic Fertilizer 5-2-3.....	1	4.30
Scott's New Turf Builder 20-10-5.....	1	8.24
Scott's New Turf Builder 20-10-5.....	1	7.48
Sears, Roebuck & Co.		
Cross Country 4-12-8 Bulb Food.....	1	—
Cross Country 5-10-5 Rose Food.....	1	—
Cross Country 5-10-5 Plant Food.....	1	—
Cross Country 7-7-7 Azalea, Camellia.....	1	—
Cross Country 15-30-15 Instant Tomato Food.....	1	—
Cross Country 20-20-20 Instant Rose Food.....	1	—
Cross Country 20-20-20 Instant Plant Food.....	1	—
M. L. Shoemaker Co.		
Shoemaker's "Swift-Sure" 4-10-0.....	1	—
Stim-U-Plant Labs, Inc.		
Stim-U-Plant 5-8-7 African Violet Food.....	1	—
Stim-U-Plant 11-12-15 Plant Food Tablets.....	1	—

Mixtures Substantially Complying with Guarantees—Concluded

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Swift & Co.		
Swift's Special Golf 8-6-4.....	1	1.00
Vigoro 6-10-4 Complete Plant Food.....	2	—
Golden Vigoro 6-10-4.....	1	2.77
Vigoro Rose Food 6-10-4.....	1	1.86
Vigoro 20-10-15 Instant.....	1	—
Taft Oil Co.		
Super Lawn 10-8-4.....	1	—
Universal Chemical Co.		
Electra Plant Food 5-10-3.....	1	2.22
Stay Green Lawn Food 8-6-2.....	1	4.25
Hydropon 10-12-25.....	1	—
Valley Feed & Supply Co., Inc.		
Adorna 3-1-1.....	1	3.43
Winslow Nurseries, Inc.		
Winslow's All Purpose Green Valley Plant Food 5-10-5.....	1	—
Winslow's Green Valley High Organic Turf Food 8-6-2.....	1	.97

NITROGEN COMPOUNDS

Manufacturer and Brand	Nitrogen	
	Found	Guaranteed
Allied Chemical & Dye Corp.		
Arcadian Ammonium Nitrate.....	33.1	33.5
The American Agricultural Chemical Co.		
Agrinite.....	7.00	7.
Agrinite.....	7.29	7.
Agrinite.....	7.0	7.
Agrinite.....	7.44	7.
The American Cyanamid Co.		
Aero Cyanamid, Granular.....	21.52	21.
Aero Cyanamid, Granular.....	20.89	21.
Aeropills, Ammonium Nitrate Fertilizer.....	33.5	33.5
Aeropills, Ammonium Nitrate Fertilizer.....	33.69	33.5
Aeropills, Ammonium Nitrate Fertilizer.....	33.92	33.5
Aeropills, Ammonium Nitrate Fertilizer.....	33.5	33.5
Aero Urea.....	44.64	45.
Garden Cyanamid ²	19.31*	21.
The Baker Castor Oil Co.		
Baker's Castor Pomace.....	5.83	5.35
Baker's Castor Pomace.....	6.22	5.35
**Baker's Castor Pomace.....	6.65	5.5
***Baker's Castor Pomace.....	6.88	5.5
Bonide Chemical Co.		
Quick Green.....	46.15	46.
Carac Corp.		
Hycon.....	46.7	46.
Chilean Nitrate Sales Corp.		
Champion Nitrate of Soda.....	16.00	16.
Champion Nitrate of Soda.....	16.00	16.
Commercial Solvents Corp.		
HiD Ammonium Nitrate.....	33.50	33.5
Consolidated Rendering Co.		
Ammonium Nitrate.....	33.68	33.5
Corenco Organic Tankage.....	9.12	8.25
Corenco Sulphate of Ammonia.....	20.82	20.5
Faesy & Besthoff, Inc.		
****F & B Cottonseed Meal.....	6.90	6.
F & B Nitrate of Soda.....	15.69	16.
F & B Sulphate of Ammonia.....	20.26	20.5

* Deficient.

** Total phosphoric acid 2.10% and potash 1.14%.

*** Total phosphoric acid 2.30% and potash 1.09%.

**** Total phosphoric acid 2.80% and potash 1.67%.

² Lot in stock two years, resulting in moisture pick-up and loss of nitrogen.

NITROGEN COMPOUNDS—Continued

Manufacturer and Brand	Nitrogen	
	Found ¹	Guaranteed
Goulard & Olena, Inc.		
G & O Nitrate of Soda.....	16.00	16.
G & O Prime Cottonseed Meal.....	6.92	6.7
G & O Sulphate of Ammonia.....	19.96 ¹	20.75
Humphreys-Godwin Co.		
Dixie Brand Cottonseed Meal.....	6.74	6.56
Spencer Kellogg & Sons, Inc.		
Castor Pomace.....	6.13	5.5
Kelly-Western Seed Div., Utah Cooperative Assn		
Pax Plant Food.....	7.46	7
Nitrogen Div., Allied Chemical & Dye Corp		
Arcadian ANL Fertilizer.....	20.73	20.5
Urea 45 Fertilizer Compound.....	45.40	45.
Norsk Hydro (Made in Norway)		
Calcium Nitrate.....	15.09	15.5
Old Fox Agricultural Sales, Inc.		
Old Fox Brand Organo.....	4.83	5.
Old Fox Organo.....	5.29	5.
O. M. Scott & Sons Co.		
Scott's New Weed & Feed.....	25.02	25.
Sears, Roebuck & Co.		
Cross Country Sulphate of Ammonia.....	21.03	20.5
Sohio Chemical Co.		
Sohigro Urea Fertilizer Compound.....	45.12	45.

¹ Seriously deficient.

PRODUCTS SUPPLYING ORGANIC NITROGEN AND PHOSPHORIC ACID

Manufacturer and Brand	Total Nitrogen Found	Total Phosphoric Acid Found	Available Phosphoric Acid	
			Found	Guaranteed
Armour Fertilizer Works				
Ammoniac Plant Food 5-5	5.48	6.15	5.35	5.0
H. J. Baker & Bros.				
Nitrogen All Organic Fertilizer 5-4....	4.65		4.00	4.0
Nitrogen All Organic Fertilizer 5-4....	4.64	4.50	4.00	4.0
Joseph Breck & Sons				
Breck's Greenite 5-4.....	5.48	6.15	5.43	4.0
Breck's Greenite 5-4.....	3.88*		4.20	4.0
Fiestar, Inc.				
**Fiestar 2-2	1.85		2.50	2.0
Hubbard Hall Chemical Co.				
Nitrogranite 5-4.....	5.51		4.00	4.0
True Organic Lawn Fertilizer 5-4.....	5.54		4.10	4.0
International Minerals & Chemical Corp.				
International Mello Green 5-5.....	5.63		5.13	5.0
International Mello Green 5-5.....	5.28	5.70	5.00	5.0
International Mello Green 5-5.....	5.17	5.25	4.69	5.0
International Mello Green 5-5.....	5.21	5.58	5.00	5.0
Sears, Roebuck & Co.				
Cross Country Lawn Food 5-5.....	5.64	6.10	5.30	5.0
Sewerage Commission of the City of Milwaukee				
Milorganite 5.5 - 4.....	5.93	4.60	4.00	4.0
Milorganite 5.5 - 4.....	5.97	4.70	4.06	4.0

*Approximate shortage \$11.20 per ton.

**Chlordane guaranteed .40%, Found .40%.

BONE MEAL

Because one lot of bone meal was found to be adulterated with rock phosphate an extensive study of the quality of these products sold in Massachusetts was made. The adulterated product was withdrawn from sale.

Two other samples were found to be apparently accidental mixtures of fertilizer ingredients and bone meal, since other samples marketed by the same manufacturers were found to be normal.

However, to get a picture of the composition of normal bone meal as presently being sold, other fertilizer factors besides nitrogen and total phosphoric acid were determined on a number of samples. The values found are listed in the following table.

There is evidence that in some cases adulteration is taking place somewhere along the line from the primary producer to the retailer. Two samples of bone meal received from another state showed them to be mixtures of castor pomace, phosphate rock, and bone meal.

Manufacturer & Brand	Total Nitrogen Found	Total Phosphoric Acid		Water Insol. Org. N	Ammonia & Urea N	Water Soluble Phosphoric Acid	Chlorine	Sulfates as SO ₃	Sand & Other Inert Matter	Microscopic Examination
		Found	Guaranteed							
Agricultural Products Co.										
Apco Ground Bone Meal 2.25-20	2.53	27.80	20.	1.77	.06	.11	none	.14	.30	As represented.
Apco Ground Bone Meal 2.25-20	2.60	25.3	20.	—	—	—	—	—	—	As represented.
The American Agricultural Chemical Co.										
Bone Meal 1.25-25	2.21	27.20	25.	—	.08	.05	none	.31	.28	As represented.
Bone Meal 1.25-25	2.82	26.80	25.	2.04	—	—	—	—	—	As represented.
Armour Fertilizer Works										
Armour's Bone Meal 2.3-23	2.52	26.50	23.	—	—	.06	.03	.09	.20	As represented.
Armour's Bone Meal 2.3-23	3.00	24.10	23.	2.15	.04	.82	.77	4.84	1.82	Mislabeled. A mixture of bone meal & other fertilizer materials.
Armour's Bone Meal 1.23-23	3.17	22.90	23.	1.50	.94	—	—	—	—	As represented.
Armour's Bone Meal 2.3-23	3.31	24.20	23.	2.38	.06	.04	none	.29	.28	As represented.
Joseph Breck & Sons										
Breck's Bone Meal 2.5-20	2.14	27.8	20.	—	—	.13	.05	.10	.—	As represented.
Breck's Bone Meal 2.5-20	2.14	26.70	20.	1.28	.06	.05	none	.08	.30	As represented.
Breck's Bone Meal 2.5-20	2.52	26.40	20.	1.68	.02	.07	.03	.09	.20	As represented.
Breck's Bone Meal 2.5-20	2.84	24.40	20.	—	.08	—	—	—	—	As represented.
Central Chemical Corp.										
Farmrite Bone Meal 2.3-20	4.23	23.80	20.	—	.07	.19	none	.21	.30	As represented.
Farmrite Bone Meal 2.3-20	4.41	22.80	20.	3.71	—	—	—	—	—	As represented.

BONE MEAL—Continued

Manufacturer & Brand	Total Nitrogen Found	Total Phosphoric Acid		Water Ins. Org. N	Ammonia & Urea N	Water Soluble Phosphoric Acid	Chlorine	Sulfates as SO ₃	Sand & Other Inert Matter	Microscopic Examination
		Found	Guaranteed							
Consolidated Rendering Co.										
Corenco Ground Bone 2-22	2.86	26.8	22.	—	—	—	—	—	—	As represented.
Corenco Ground Bone 2-22	2.94	27.20	22.	—	—	—	—	—	—	As represented.
Corenco Ground Bone 2-22	3.87	22.30	22.	—	—	—	—	—	—	As represented.
Corenco Ground Bone 2-22	2.88	26.50	22.	2.08	.08	.05	.13	.33	.70	Mislabeled. A mixture of bone meal and other fertilizer materials.
Corenco Ground Bone 2-22	5.53	16.30	22.	1.11	3.68	.51	3.39	12.82	10.18	As represented.
Corenco Ground Bone 2-22	2.82	28.00	22.	2.06	.06	.06	none	.11	.43	As represented.
Corenco Ground Bone 2-22	2.77	27.90	22.	2.29	.05	.07	.03	.10	.35	As represented.
Corenco Ground Bone 2-22	2.75	27.80	22.	2.34	.06	.09	.05	.15	.50	As represented.
Corenco Ground Bone 2-22	2.68	26.80	22.	1.93	.18	.08	.10	.67	1.75	A little contamination with other fertilizer materials.
Corenco Ground Bone 2-22	3.02	26.90	22.	2.34	.06	.05	none	.10	.28	As represented.
Corenco Ground Bone 2-22	2.79	27.40	22.	2.17	.04	.07	.03	.11	.20	As represented.
Corenco Ground Bone 2-22	3.06	26.10	22.	2.33	.23	—	.15	.82	1.18	As represented.
Corenco Ground Bone 2-22	2.89	27.30	22.	2.03	.11	.06	.13	.35	.50	As represented.
Corenco Ground Bone 2-22	2.91	28.00	22.	1.99	.02	.06	.05	.10	.30	As represented.
Facey & Besthoff, Inc.										
Pure Steamed Bone Meal 2-47-23	2.61	27.40	23.	1.79	.08	.08	.05	.08	.33	As represented.
Pure Steamed Bone Meal 2-47-23	2.80	27.20	23.	1.63	.03	.16	none	.09	.38	As represented.
Pure Steamed Bone Meal 2-47-23	3.17	26.90	23.	—	—	—	—	—	—	As represented.
Pure Steamed Bone Meal 2-47-23	2.47	27.70	23.	—	—	—	—	—	—	As represented.
Gould & Olney, Inc.										
G. & O. Bone Meal 2-4-20	2.65	21.50	20.	—	—	—	—	—	—	Mislabeled. Product is a mixture of tankage, rock phosphate, and bone meal. Withdrawn from sale.
G. & O. Bone Meal 2-4-20	2.99	20.80	20.	2.53	.21	.20	.46	.17	—	Mislabeled. Product is a mixture of tankage, phosphate rock and bone meal. Withdrawn from sale.
Thomas J. Grey Co.										
Guthrie's Green Brand Bone Meal 2-20	2.43	29.00	20.	1.66	.01	.06	none	.11	.35	As represented.

BONE MEAL—Continued

Manufacturer & Brand	Total Nitrogen Found	Total Phosphoric Acid		Water Insol. Org. N	Ammonia & Urea N	Water Soluble Phosphoric Acid	Chlorine	Sulfates as SO ₂	Sand & Other Inert Matter	Microscopy Examination
		Found	Guaranteed							
A. H. Hoffman, Inc.										
Hoffman Bone Meal 3.7-18.5	6.61	18.75	18.5	5.51	.05	—	.38	—	—	As represented.
Hoffman Bone Meal 3.7-18.5	6.57	18.00	18.5	5.74	.06	.08	—	.81	.95	As represented.
Hoffman Bone Meal 3.7-18.5	6.47	19.20	18.5	5.74	.06	.08	.26	.13	.55	As represented.
Hoffman Bone Meal 3-13	6.40	10.80*	13*	5.53	.11	.09	.28	.43	.85	Deficient in available phosphoric acid.
Hoffman Bone Meal 3-13	5.93	10.76*	13*	4.99	.06	.07	.15	.22	1.00	Deficient in available phosphoric acid.
Hoffman Bone Meal 3-13	6.17	10.02*	13*	5.73	.08	.09	.36	.16	.70	Deficient in available phosphoric acid.
Hubbard Hall Chemical Co.										
H & H Bone Meal 2-23	3.14	27.20	23	2.27	.03	.07	.08	.12	.40	As represented.
H & H Bone Meal 2-23	2.70	27.80	23	2.10	.02	.05	none	.33	.30	As represented.
H & H Bone Meal 2-23	2.86	26.80	23	2.10	.05	.07	.08	.33	.30	As represented.
H & H Bone Meal 2-23	2.56	27.90	23	—	—	—	—	—	—	As represented.
H & H Bone Meal 2-23	2.87	27.40	23	—	—	—	—	—	—	As represented.
H & H Bone Meal 2-23	2.84	27.20	23	2.17	.06	.09	none	.08	.30	As represented.
International Minerals & Chemical Co.										
International Bone Meal 2.47-2.3	2.74	26.40	23	—	—	—	—	—	—	As represented.
Lebanon Chemical Corp.										
Lebanon Bone Meal 2.3-20	2.87	25.00	20	—	—	—	—	—	—	As represented.
Lebanon Bone Meal 2.3-20	2.92	24.60	20	—	—	—	—	—	—	As represented.
Old Fox Agricultural Sales, Inc.										
Old Fox Bone Meal 2-23	2.30	27.6	23	—	—	—	—	—	—	As represented.
The Rogers & Hubbard Co.										
Grö Fast Bone Meal 2-23	2.85	25.70	23	1.98	.04	.07	none	.31	.25	As represented.
Grö Fast Bone Meal 2-23	2.37	27.90	23	1.71	.09	.08	.08	.22	.38	As represented.
Sears, Roebuck & Co.										
Cross Country Bone Meal 2-23	2.30	27.50	23	—	—	—	—	—	—	As represented.
Cross Country Bone Meal 2-23	2.46	27.30	23	1.74	.04	.08	.08	.07	.30	As represented.
Cross Country Bone Meal 2-23	2.19	27.70	23	1.53	.06	.12	.05	.22	.28	As represented.
Swiss Farms, Inc.										
Bone Meal 2-20	3.28	23.10	20	2.24	.06	.08	none	.28	.58	As represented.

PHOSPHORIC ACID COMPOUNDS

Manufacturer and Brand	Total Phosphoric Acid	Available Phosphoric Acid	
		Found	Guaranteed
The American Agricultural Chemical Co.			
Normal Superphosphate 18%	—	19.10	18.
Normal Superphosphate 18%	—	18.50	18.
Agri Phos Superphosphate 20%	—	20.40	20.
Agri Phos Superphosphate 20%	—	21.00	20.
Ground Phosphate Rock	31.40*	—	—
Consolidated Rendering Co.			
Corenco Superphosphate 20%	—	21.00	20.
Corenco Superphosphate 20%	—	20.80	20.
Corenco Superphosphate 20%	—	21.30	20.
Corenco Superphosphate 20%	—	20.7	20.
Davison Chemical Co.			
Davco Superphosphate 20%	—	20.60	20.
Eastern States Farmers' Exchange, Inc.			
Eastern States Superphosphate 20%	—	20.50	20.
Eastern States Superphosphate 20%	—	20.70	20.
Faesy & Besthoff, Inc.			
F & B Superphosphate 20%	—	20.90	20.
Farm Bureau Ass'n.			
Farm Bureau Superphosphate 20%	—	20.00	20.
Farm Bureau Superphosphate 20%	—	20.20	20.
Goulard & Olena, Inc.			
G & O Superphosphate 20%	20.90	19.68	20.
The Hubbard-Hall Chemical Co.			
Granulated Superphosphate 20%	—	20.10	20.
International Minerals & Chemical Corp.			
International Superphosphate 20%	—	20.10	20.
International Superphosphate 20%	—	20.00	20.
International Superphosphate 20%	—	20.00	20.
International Superphosphate 20%	—	20.90	20.
International Superphosphate 20%	—	21.00	20.
Old Fox Agricultural Sales, Inc.			
Old Fox Brand 0-20-0	—	20.30	20.

* Guaranteed 30% total phosphoric acid.

POTASH COMPOUNDS

Manufacturer and Brand	Water Soluble Potash	
	Found	Guaranteed
Armour Fertilizer Works		
Armour's Muriate of Potash.....	59.52	60.
Consolidated Rendering Co.		
Corenco Muriate of Potash.....	60.48	60.
Corenco Muriate of Potash.....	60.94	60.
Corenco Muriate of Potash.....	57.76*	60.
Eastern States Farmers' Exchange, Inc.		
Eastern States Muriate of Potash.....	61.44	60.
Faesy & Besthoff, Inc.		
F & B Muriate of Potash.....	58.22*	60.
Goulard & Olena		
G & O Muriate of Potash.....	56.54**	60.
The Hubbard-Hall Chemical Co.		
Muriate of Potash.....	60.96	60.
International Minerals & Chemical Corp.		
International Muriate of Potash.....	60.00	60.
National Potash Co.		
Muriate of Potash.....	60.0	60.

* Approximate shortage of \$2.24 per ton.

** Seriously deficient.

It has been stressed repeatedly in the Massachusetts Fertilizer Control bulletins that the gardener buys dried animal manures because he thinks it is mainly organic matter and, because of this, has special properties not possessed by a regular garden fertilizer such as a 5-10-15 or a 5-10-10 grade. When a gardener buys a 100 lb. bag of sheep manure and the bag contains 63 lbs. sand, the gardener is not getting what he thinks he is even though the bag is labeled "Sheep Manure & Inert Matter."

The New England fertilizer control officials require that all manures containing over 30% sand and other inert matter be labeled "Manure & Inert Matter". This requirement should not be considered a license to load the dried animal manures with unreasonable quantities of sand.

Unless manufacturers are willing to cooperate it may be necessary to place a maximum limit on the amount of sand and other inert matter the manures may contain. It might be suggested that any manure containing over 50% sand and other inert matter either be prohibited or labeled as "Inert Matter & Manure."

During the past year several lots of dried animal manures were withdrawn from sale, and the registration of one brand was cancelled.

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Organic Matter	Sand and Inert Matter	Microscopic Examination
Agricultural Products Co.						
Apco Sheep Manure (1.5 - .3 - 2)	2.30	1.20	2.58	53.8	27.8	Mislabeled. Mostly wood combings, poultry litter, and crab meal.
Apco Sheep Manure (1.5 - .3 - 2)	1.87	.35	4.86	37.9	44.9	Mislabeled. Product is mostly wood combings containing a great deal of dirt and whole wool seeds.
Apco Sheep Manure (1.5 - .3 - 2)	1.54	.30	4.92	36.9	46.5	Mislabeled. Mostly wood combings and soil. It contains many wool seeds, apparently viable.
Apco Sheep Manure (1.5 - .3 - 2)	1.87	.35	4.68	40.6	43.2	Mislabeled. Mostly wood combings and soil. It contains many wool seeds, apparently viable.
The American Agricultural Chemical Co.						
Dried Sheep Manure & Inert Matter (1.25-1-1.5)	1.25	1.05	1.55	23.6	63.2	Mislabeled. Organic matter is mostly cattle manure.
Dried Sheep Manure & Inert Matter (1.25-1-1.5)	1.59	1.75	2.64	50.0	29.2	As represented.
Armour Fertilizer Works						
Armour Cattle Manure (2-1-2)	2.00	2.00	3.72	55.9	23.2	As represented.
Armour Pulverized Sheep Manure (1.25-1-2)	1.32	1.50	4.92	40.7	36.4	Mislabeled. Sample is sheep manure and inert matter.
Armour Pulverized Sheep Manure & Inert Matter (1.25-1-2)	1.29	1.75	4.99	38.10	39.2	As represented.
Armour Pulverized Sheep Manure & Inert Matter (1.25-1-2)	1.25	1.70	4.33	35.2	42.1	As represented.
Armour Pulverized Sheep Manure & Inert Matter (1.25-1-2)	1.40	1.80	4.80	40.2	36.0	As represented.
Armour Pulverized Sheep Manure & Inert Matter (1.25-1-2)	1.47	1.75	5.28	41.3	35.4	As represented.
Armour Shredded Cattle Manure (2-1-2)	2.00	1.90	3.66	59.8	21.1	As represented.
Armour Shredded Cattle Manure (2-1-2)	2.05	1.25	2.00	60.3	24.6	As represented.

PULVERIZED ANIMAL MANURES—Continued

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Organic Matter	Sand and Inert Matter	Microscopic Examination
Joseph Breck & Sons, Corp.						
Breck's Cow Manure (2-1-1)	2.00	5.55	1.74	64.9	6.8	As represented.
Breck's Cow Manure (2-1-1)	2.00	5.95	2.10	65.7	6.7	As represented.
Consolidated Rendering Co.						
Corbaco Sheep Manure (1.25-1-2)	1.79	1.85	2.26	53.9	26.8	As represented.
Corbaco Sheep Manure (1.25-1-2)	1.78	1.90	3.11	55.50	20.6	As represented.
Corbaco Sheep Manure (1.25-1-2)	1.89	1.80	2.40	50.3	29.3	As represented.
Corbaco Sheep Manure (1.25-1-2)	1.91	1.75	2.76	52.3	27.7	As represented.
Corbaco Sheep Manure (2-1-2)	2.26	1.85	3.48	65.0	15.0	As represented.
Corbaco Spuns-On (3-2.5-1.5)	3.94	3.35	2.34	70.4	4.7	A good grade of poultry manure & litter.
Dairy Organic Compost Co.						
Gardener Rotted Cow Manure Compost (1-1-1)	1.49	1.20	1.92	31.4	26.7	As represented.
Gardener Rotted Cow Manure Compost (1-1-1)	1.30	1.15	1.53	27.10	35.1	Mislabeled. Must be labeled as "Cow Manure & Inert Matter."
Garden Supply Sales Corp.						
Farmmanure (3-2-1) . . .	3.66	3.40	2.19	62.8	12.9	A good grade of poultry manure & litter.
Farmmanure (2-1-1) . . .	3.57	2.65	1.60	65.1	16.7	A good grade of poultry manure & litter.
A. H. Hoffman, Inc.						
Hoffman Cow Manure (2-1-1) . . .	2.00	1.40	2.89	81.0	1.87	As represented.
Hoffman Cow Manure (2-1-1) . . .	2.00	1.70	2.83	80.8	1.90	As represented.
Hoffman Cow Manure (2-1-1) . . .	2.00	1.30	2.70	80.8	2.2	As represented.
Hoffman Cow Manure (2-1-1) . . .	2.07	1.40	2.27	83.3		As represented.
Hoffman Cow Manure (2-1-1) . . .	1.98	1.60	2.07	78.8	4.4	As represented.
Hoffman Cow Manure (1-1-2) . . .	2.14	1.85	2.16	81.8	1.8	As represented.
Hoffman Sheep Manure (1-1-2) . . .	1.34	1.60	4.44	39.0	40.22	Mislabeled. A mixture of sheep manure & inert matter.
Hoffman Sheep Manure (1-1-2) . . .	1.72	2.20	3.60	46.6	30.6	Mislabeled. A mixture of sheep manure & inert matter.
Hoffman Sheep Manure (1-1-2) . . .	1.25	1.65	4.56	35.7	42.2	Mislabeled. A mixture of sheep manure & inert matter.
Hoffman Sheep Manure (1-1-2) . . .	1.33	1.75	3.72	39.1	39.1	Mislabeled. A mixture of sheep manure & inert matter.
Hoffman Sheep Manure (1-5-1-2) . . .	1.30	1.15	3.75	63.1	45.3	Mislabeled. A mixture of sheep manure & inert matter.
Hoffman Sheep Manure (1-5-1-2) . . .	1.30	1.10	3.27	37.6	43.7	Mislabeled. A mixture of sheep manure & inert matter.
Hoffman Sheep Manure (1-1-2) . . .	1.35	2.75	5.10	40.0	36.7	Mislabeled. A mixture of sheep manure & inert matter.

PULVERIZED ANIMAL MANURES—Concluded

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Organic Matter	Sand and Inert Matter	Microscopic Examination
Hubbard Hall Chemical Co.						
H H Cow Manure & Inert Matter (2-1-1)	2.00	1.15	1.60	36.7	45.0	As represented.
H H Cow Manure & Inert Matter (2-1-1)	2.13	1.78	1.80	39.6	42.8	As represented.
H H Sheep Manure & Inert Matter (1.25-1-1)	1.48	1.50	3.27	38.6	41.0	Mislabeled. Product is mostly cow manure.
H H Sheep Manure & Inert Matter (1.25-1-1)	1.29	1.80	3.68	31.9	45.4	As represented.
H H Sheep Manure & Inert Matter (1.25-1-1)	1.29	1.10	1.38	25.20	61.5	Mislabeled. Mostly cow manure & inert matter.
H H Sheep Manure & Inert Matter (1.25-1-1)	1.32	1.30	1.64	28.6	55.3	Mislabeled. Mostly cow manure & inert matter.
Macgeo Dehydrating Co.						
Fertal Gro Cow Manure (2-1-7)	2.18	1.00	7.05	65.2	5.8	As represented.
Fertal Gro Cow Manure (2-1-7)	3.21	1.00	7.80	63.9	7.3	As represented.
Natural Plant Food Co.						
Longhorn Cattle Manure (2-1-2)	2.01	1.10	2.27	61.7	19.30	As represented.
Ramshorn Sheep Manure (2-1-2)	2.12	1.25	3.15	57.8	16.7	Mislabeled. Mostly cattle manure.
Sears, Roebuck & Co.						
Cross Country Cattle Manure (1.5-1-2)	2.21	1.25	3.33	50.5	27.6	As represented.
Cross Country Cattle Manure (1.5-1-2)	1.88	1.00	2.93	58.0	31.4	Mislabeled. Product is cattle manure & inert matter.
Cross Country Cattle Manure (1.5-1-2)	2.24	1.20	3.03	53.2	23.6	As represented.
Cross Country Sheep Manure (1.5-1-2)	2.77	1.10	2.97	66.0	10.4	Mislabeled. Mostly cow manure.
Cross Country Sheep Manure (1.5-1-2)	2.07	1.15	3.15	45.9	30.3	As represented.
Cross Country Sheep Manure (1.5-1-2)	2.20	1.35	2.83	47.7	28.6	As represented.
Triple A Mills						
Sure-Gro (3.75-2.5-1.5)	4.59	2.70	2.61	74.1	1.0	A good grade of poultry manure & litter.
Walker Gordon Laboratory Co.						
Boxing (2-1-1)	2.00	1.45	2.57	—	1.9	As represented.
Boxing (2-1-1)	1.86	1.50	1.89	79.4	3.7	As represented.

AGRICULTURAL LIME PRODUCTS

Manufacturer & Brand	Calcium Oxide (CaO)		Magnesium Oxide (MgO)		Neutralizing Value Expressed in Terms of Calcium Oxide (Percent)	Insoluble Matter	Mechanical Analysis (Percent)	
	Found	Guaranteed	Found	Guaranteed			Finer Than 100-mesh	Coarser Than 20-mesh
Adams Hydrate Co.								
Fertility Hydrated Land Lime.....	61.8	60	.9	5	60.9	.6	—	—
Fertility Hydrated Land Lime.....	60.5	60	1.6	5	60.2	.5	—	—
Fertility Hydrated Land Lime.....	26.31	30	18.6	20	—	17.8	80.5	—
Joseph Breck & Sons, Corp.								
Breck's Lime.....	31.4	28	20.9	18	60.6	1.8	—	—
Conklin Limestone Co., Inc., Canaan, Conn.								
High Magnesium Agricultural Ground Limestone.....	30.0	30	18.3	18	55.6	8.0	53.4	4.3
Conklin Limestone Co., Inc., Lincoln, R. I.								
Garden Limestone.....	37.6	34	13.0	1.5	53.1	8.1	52.4	1.5
A. H. Hoffman, Inc.								
Hoffman Hydrated Lime.....	60.0	60	1.9	1	62.1	.5	—	—
Kelley Island Lime Co.								
Tiger All Purpose Hydrated Lime.....	43.81	47.12	30.3	34.14	83.1	.50	—	—
Lee Lime Corp.								
Lee ABC All Purpose Lime.....	40.32	43	29.1	28	76.1	.90	—	—
Lee ABC All Purpose Lime.....	43.0	43	29.1	28	83.1	.9	—	—
Lee Double Strength Agricultural Hydrated Lime.....	47.9	43	31.0	30	91.1	1.0	—	—
Lee Lawn & Garden Lime.....	39.4	38	7.4 ^a	12	47.7	15.7	88.3	.4
Lee Pulverized Limestone.....	39.4	35	7.0	5	47.7	15.8	88.9	.5
Lee Pulverized Limestone.....	31.4	30	21.2	20	59.7	1.2	47.8	1.2
Lee Pulverized Limestone.....	43.0	35	8.5	5	52.0	8.9	91.6	—
Lee Pulverized Limestone.....	32.82	35	19.9	5	58.7	1.7	54.2	6.1
Tobey Agra Hydrate.....	37.6	35	27.5	25	72.6	1.4	—	—
Tobey Agra Hydrate.....	36.7	35	27.8	25	73.0	3.0	—	—
Tobey Agra Hydrate.....	39.4	35	27.2	25	76.1	.6	—	—

AGRICULTURAL LIME PRODUCTS—Concluded

Manufacturer & Brand	Calcium Oxide (CaO)		Magnesium Oxide (MgO)		Neutralizing Value Expressed in Terms of Calcium Oxide (Percent)	Insoluble Matter	Mechanical Analysis (Percent)	
	Found	Guaranteed	Found	Guaranteed			Finer Than 100-mesh	Coarser Than 20 mesh
Limestone Products, Corp.								
Lime Crest Brand Agricultural Hydrated Lime.....	68.5	66.	6.0	3.	75.3	1.4	—	—
Lime Crest Brand Calcite Pulverized Limestone.....	46.1	42.	3.8	2.	50.5	9.3	72.8	0.6
New England Lime Co.								
Nelco Agricultural Ground Limestone.....	31.4	30.	21.2	21.	60.3	.6	70.5	.5
Nelco Agricultural Hydrated Lime.....	43.31	47.	29.0	31.	83.4	.6	—	—
Nelco High Calcium Hydrated Lime.....	73.5	73.	6.	.5	73.8	1.8	—	—
Nelco Land Lime.....	39.4	35.	27.5	.25	77.5	1.6	—	—
O. M. Scott & Sons Co.								
Scott's Soil Improver.....	29.6	14.	10.4	9.24	24.2	10.2	—	—
United States Gypsum Co.								
Red Top General Purpose Hydrated Lime.....	70.8	70.	3.2	trace	73.6	1.0	—	—
Red Top General Purpose Hydrated Lime.....	70.8	70.	3.5	trace	74.2	.6	—	—
Red Top Hydrated Agricultural Lime.....	73.5	70.	.3	trace	70.7	.4	—	—
USG Agricultural Limestone.....	28.42	30.	20.6	.20	54.5	9.1	48.1	.2
USG Agricultural Limestone.....	52.9	50.5	1.9	.25	54.6	3.6	91.8	—
USG Cheshire Land Lime.....	60.0	60.	4.4	.25	65.2	2.2	—	—

¹ Deficient in calcium oxide and magnesium oxide.

² Deficient in calcium oxide.

³ Deficient in magnesium oxide.

⁴ Gypsum 52.5%.

DIRECTORY OF MANUFACTURERS WHO REGISTERED FERTILIZERS FOR SALE IN MASSACHUSETTS IN 1958

Agricultural Products, 156 Valley St., E. Providence, R. I.
Alaska Fertilizer Co., 84 Seneca St., Seattle 1, Wash.
Allied Chemical & Dye Corp., Nitrogen Div., Hopewell, Va.
American Agricultural Chemical Co., 285 River St., North Weymouth, Mass.
American Bulb Co., 711 Third Ave., New York 17, N. Y.
American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.
American Liquid Fertilizer Co., Inc., 2nd St. at St. Clair, Marietta, Ohio
Armour Fertilizer Works, Carteret, N. J.
Atlas Fish Fertilizer Co., 1 Drum St., San Francisco 11, Cal.

F. A. Bartlett Tree Expert Co., 2770 Summer St. Stamford, Conn.
Better Homes Bureau, 165 East Union St., Newark, N. Y.
Bonide Chemical Co., 382 North Genesee St., Utica 4, N. Y.
Borden Co., Chemical Div., 350 Madison Ave., New York 17, N. Y.
Joseph Breck & Sons Corp., 401 Summer St., Boston 10, Mass.
Bridgewater Nursery Garden, 1278 Bedford St., Bridgewater, Mass.
Buell Fertilizer Co., Exeter, N. H.

California Spray-Chemical Corp., Lucas and Ortho Way, Richmond, Cal.
Carac Corp., Fairfield Road, Mountain View, N. J.
Carbola Chemical Co., Inc., Natural Bridge, N. Y.
Chesnicks Landscape Service, 47 Broad St., Westfield, Mass.
Chicago Stock Yards Compost Co., 503 Exchange Bldg., Chicago 9, Ill.
Chiguano Compost Corp., Cherry St., Marion, Conn.
Chilean Nitrate Sales Corp., 120 Broadway, New York 5, N. Y.
Clapper Co., 1121 Washington St., West Newton 65, Mass.
Clinton Nurseries, Clinton, Conn.
Cloro-Spray Corp., 129 State St., Dover Del.
Coastal Dry-Manure Corp., Dagsboro, Del.
Cocke & Co., 208 William-Oliver Bldg., Atlanta 3, Ga.
Consolidated Rendering Co., 178 Atlantic Ave., Boston 10, Mass.

Davey Tree Expert Co., 117 South Water St., Kent, Ohio
Davison Chemical Co., Div. of W. R. Grace & Co., 101 North Charles St., Baltimore 3, Md
Doggett-Pfeil Co., 681 Morris Turnpike, Springfield, N. J.
Doughton Seed Co., 253 Brunswick St., Jersey City 2, N. J.
E. I. du Pont de Nemours & Co., Wilmington, Del.

Eastern States Farmers' Exchange, Inc., 26 Central St., West Springfield, Mass.
Edgewood Farms, Inc., Marysville, Ohio
Essex County Cooperative Farming Association, 144 South Main St., Topsfield, Mass.
Excell Laboratories, Inc., 2732 Indiana Ave., Chicago, Ill.

Faesys & Besthoff, Inc., 25 East 26th St., New York 10, N. Y.
Farm Bureau Association, 155 Lexington St., Waltham 54, Mass.
Fiestar, Inc., 655 Fifth Ave., New York 22, N. Y.
Forward House Div., Olin Mathieson Chemical Corp., P. O. Box 991, Little Rock, Ark.
Frank's Market Garden, 1398 Allen St., Springfield, Mass.
Frost & Higgins Co., 20 Mill St., Arlington 74, Mass.

G. D. Garden Products Inc., 11th St., & Railroad Ave., Huntington Station, N. Y.
G. D. Poultry, Inc., 95 Spring St., Bridgewater, Mass.
Garden Supply Sales Corp., 2120 Lake Ave., Rahway, N. J.
Garfield Williamson, Inc., 1072 Westside Ave., Jersey City 6, N. J.
Glorion Div., Aluminum and Chemical Corp., 22 West Putnam Ave., Greenwich, Conn.
Goulard & Olen, Inc., Skillman, N. J.
Grace Chemical Co., Div. of W. R. Grace & Co., 501 Edway Bldg. Memphis 3, Tenn.
Grant Co., 2735 North Ashland Ave., Chicago 14, Ill.
Thomas J. Gray Co., Div. of Littlefield-Wyman Nurseries, Inc., 227 Centre Ave., Abington, Mas

Heller Greenhouse Laboratories, 218 East Pikes Peak Ave., Colorado Springs, Col.

A. H. Hoffman, Inc., Landisville, Penn.

Hubbard-Hall Chemical Co., 28 Benedict St., Waterbury, Conn.

Humphreys-Godwin Co., 2246 Park Ave., Memphis, Tenn.

Hydroponic Chemical Co., Inc., Copley, Ohio

Hy-Trous Corp., 16 Fowle St., Woburn, Mass.

Independence Hall Seed Co., 2700 Wilmarco Ave., Baltimore 23, Md.

International Minerals & Chemical Corp., Woburn, Mass.

International Minerals & Chemical Corp. Phosphate Chemicals Div., 20 North Wacker Drive
Chicago 6, Ill.

K & K Fertilizer Service, 238 Russell St., Hadley, Mass.

Kapco Div., Summers Fertilizer Co., Inc., McKeesport, Penn.

Spencer Kellogg & Sons, Inc., 98 Delaware Ave., Buffalo 2, N. Y.

Kelly-Western Seed Div., Utah Cooperative Assn., P. O. Box 2310, Salt Lake City, Utah

Lawn-Tex, Inc., 1640 West Fulton St., Chicago, Ill.

Lebanon Chemical Corp., Lebanon, Penn.

Lee Patten Seed Co., 360 Ninth St., Jersey City 2, N. J.

Leeds Chemical Products, Inc., 112 East Walton St., Chicago, Ill.

Lexington Garden, Inc., 92 Hancock St., Lexington, Mass.

O. E. Linck Co., Inc., Clifton, N. J.

Loncala Phosphate Co., High Springs, Florida

L. B. Lovitt & Co., 314 Cotton Exchange Bldg., Memphis, Tenn.

John D. Lyon, Inc., 143 Alewife Brook Pkway., Cambridge 40, Mass.

Maego Dehydrating Co., Lexington, North Carolina

Mamlon Co., 1089 Whalley Ave., New Haven 15, Conn.

McKesson & Robbins, Inc., 79 Milk St., Boston 9, Mass.

Natural Plant Food Co., 210 West California St., Oklahoma City 2, Okla.

Nitro-Form Agricultural Chemicals Div., Woonsocket Color & Chemical Co., Inc.
92 Sunnyside Ave., Woonsocket, R. I.

Old Fox Agricultural Sales, Inc., 49 Valley St., East Providence, R. I.

Organic Compost Corp., Germantown, Wis.

Parks-Barnes, Inc., 530 Sixth St., Hermosa Beach, Cal.

Pedigreed Seed Co., 96 Forrest St., Jersey City 5, N. J.

Penn Co., 46 Blue Hill Ave., Milton, Mass.

Plant Products Corp., Kennedy Ave., Blue Points, L. I., N. Y.

Plantabbs Corp., 1105 Maryland Ave., Baltimore 1, Md.

Plant Shine Co., Div. of Schultz Co., 404 So. 4th St., St. Louis 2, Missouri

Ra-Pid-Gro Corp., 88 Ossian St., Dansville, N. Y.

John Reardon & Sons, Div. of Wilson & Co., Inc., 51 Waverly St., Cambridge 39, Mass.

The Renard Co., 223 Riverdale Ave., Yonkers N. Y.

Rose Manufacturing Co., 160 Main St., Beacon, N. Y.

Ruhm Phosphate & Chemical Co., Columbia, Tenn.

O. M. Scott & Sons Co., Maryville, Ohio

Sears, Roebuck & Co., 925 South Homan Ave., Chicago 7, Ill.

Sewerage Commission of the City of Milwaukee, Milwaukee 1, Wis.

Sohio Chemical Co., P. O. Box 628, Lima, Ohio

Stanton Co. Holland, Mich.

Stern's Garden Products, Inc., 404 William St., Geneva, N. Y.

Stim-U-Plant Laboratories, Inc., 2077 Parkwood Ave., Columbus 19, Ohio

Sudbury Laboratory, Dutton Road, South Sudbury, Mass.

Swift & Co., Plant Food Div., Hartford 1, Conn.

Swiss Farms, Inc., Philmont, N. Y.

Tait Oil Co., Inc., 111 Lyman St., Holyoke, Mass.
Tennessee Corp., 617-27 Grant Bldg., Atlanta, Ga.
Triple A Mills, Townsend Harbor, Mass.

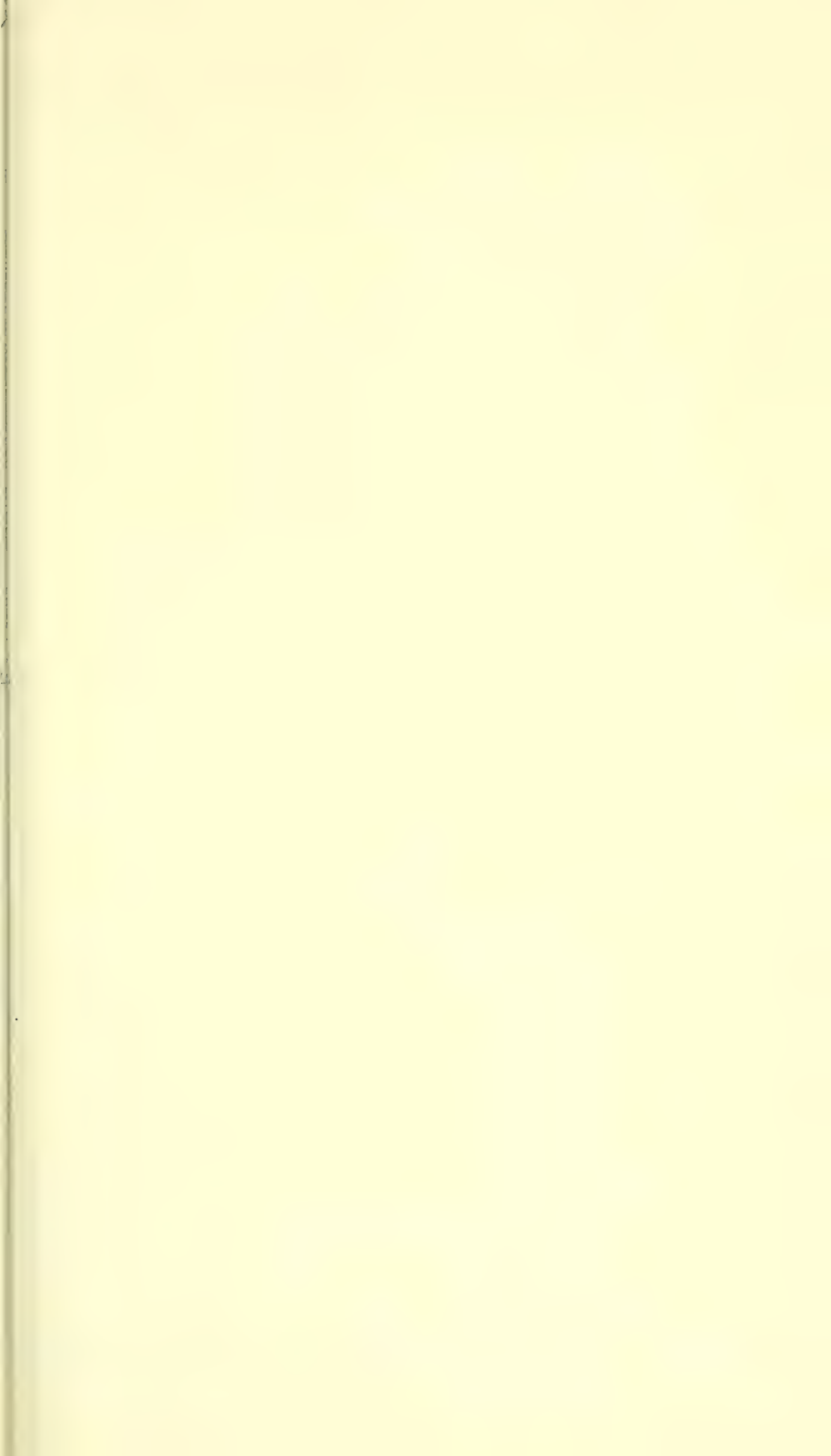
United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Penn.
Universal Chemical Co., 52 Oakville St., West Lynn, Mass.

Valley Feed & Supply Co., Inc., Union Road, Spring Valley, N. Y.

W. C. Poultry Farm, Harrington Ave., W. Concord, Mass.
Walker-Gordon Laboratory Co., Plainsboro, N. J.
Winslow Nurseries, Inc., Needham, Mass.
F. H. Woodruff & Sons, Inc., Milford, Conn.

**DIRECTORY OF MANUFACTURERS WHO REGISTERED
AGRICULTURAL LIME PRODUCTS FOR SALE
IN MASSACHUSETTS IN 1958**

Adams Hydrate Co., Inc., 177 Milk St., Boston, Mass.
Agricultural Products Co., 156 Valley St., E. Providence, R. I.
Conklin Limestone Co., Inc., Canaan, Conn.
Conklin Limestone Co., Inc., R.F.D., Saylesville, R. I.
Crawford's Wholesale Garden Supplies, 156 Valley St., Providence, R. I.
Thomas J. Grey Co., Div. of Littlefield-Wyman Nurseries, Inc., 227 Centre Ave., Abington, Ma.
A. H. Hoffman, Inc. Landisville, Penn.
Lee Lime Corp., Marble St., Lee, Mass.
Limestone Products Corp., of America, 122 Main St., Newton, N. J.
New England Lime Co., Adams, Mass.
O. M. Scott & Sons Co., Marysville, Ohio
Swiss Farms, Inc., Philmont, N. Y.
United States Gypsum Co., 300 West Adams St., Chicago 6, Ill.





Seed Inspection

by

Seed Control Service Staff

Department of Entomology and Plant Pathology

Massachusetts Agricultural Experiment Station

May 18 1959



This report, the thirty-first in seed control service, is a record of work delegated to the Massachusetts Agricultural Experiment Station during 1958 by authority of Chapter 94 as amended by Chapter 377 of the Acts of 1946.

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*Within each table the wholesalers are listed in alphabetical order and the various kinds of seeds sold by them follow the same alphabetical arrangement. The number preceding each analysis is for identification and reference. The line to the right of the letter "L" gives information copied from the label; that to the right of "F" what was found in the laboratory analysis.

SEED LABORATORY FOR THE SEASON OF 1958

By the Seed Control Service Staff of the
Department of Entomology and Plant Pathology

John H. Lilly, *Professor and Head of Department*
Wendell P. Dittmer, *Assistant Research Professor*

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Kenneth Pelton, *Laboratory Assistant*

May J. Honnay, *Secretary*
A. W. Clapp, *State Inspector*¹
Paul W. Brown, *State Inspector*¹

Frank B. Allen, *State Inspector*¹

From November 1, 1957 to November 1, 1958, The Seed Laboratory received 3725 samples of seed, of which 1263 were collected by the State Department of Agriculture and 2462 were sent in by seedsmen, farmers, and various State units. Only the 1263 official samples are reported in the tables.

Classification of the samples for which tests were completed, with the total number of laboratory tests involved, is listed in the following summary:

NUMBER OF SAMPLES	NUMBER OF TESTS	
	PURITY	GERMINATION
387 Field Crops for Purity and Germination	387	387
356 Field Crops for Germination .....	...	356
1 Field Crop for Purity	1	...
166 Lawn Mixtures and Other Types of Mixtures, for Purity; Germinations involving 741 ingredients	166	741
78 Lawn Mixtures for Germination; Germinations involving 296 ingredients .....	...	296
23 Lawn Mixtures for Purity	23	...
2258 Vegetable Samples .....	...	2258
10 Tree Samples .....	...	10
48 Tobacco Seed Samples .....	...	48
398 Flower Seed Samples .....	...	398
3725	577	4504

Field Tests to determine trueness-to-type consisted of 97 samples of vegetable seed and 373 samples of flower seeds, respectively.

The Seed Laboratory cleaned 48 lots of tobacco seed samples for Connecticut Valley farmers. The gross weight of the tobacco seed samples was 26.50 pounds, and the net weight for the cleaned seed was 21.29 pounds.

¹Employed by the State Department of Agriculture.

Results of Inspection and Analyses of Field Seeds—Sections 261 B1 and 261 C.

Each lot of Agricultural Seeds must be labeled to show the commonly accepted name and variety; except that for Barley, Buckwheat, Oats, Rye, and Wheat, when the variety is unknown, the label shall bear the statement: "Variety Unknown." The label must also show a lot number or other identification; percentage, by weight, of pure seed; percentage, by weight, of inert matter; percentage, by weight, of weed seeds; percentage, by weight, of other agricultural seeds; percentage of (a) germination, exclusive of hard seeds; (b) hard seeds, if present; month and year germination test was completed; origin of Alfalfa, Red Clover, and Field Corn (other than Hybrid)—if origin is unknown, it must be so stated; name and address of the person who labeled the seed, or who sells, offers, or exposes such seed for sale; and the names of secondary noxious weed seeds and number per ounce when present singly or collectively in excess of 1 in 5 grams and 1 in 10 grams of the smaller seeds, and per pound when present in excess of 1 in 25 grams and 1 in 100 grams of the larger seeds. Secondary noxious weeds are dodder (*Cuscuta* spp.), horse nettle (*Solanum carolinense*), wild mustard (*Brassica* spp.), wild garlic and wild onion (*Allium* spp.), perennial sow thistle (*Sonchus arvensis*), corncockle (*Agrostemma githago*), buckhorn plantain (*Plantago lanceolata*), and wild radish (*Raphanus raphanistrum*). Seed is prohibited from sale for having a false or misleading label; unless the test for germination has been completed within a nine-month period or if it contains primary noxious weed seeds in excess of tolerance. Primary noxious weeds are Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), and quack grass (*Agropyron repens*).

Two hundred ninety-seven samples of field crop seeds were analyzed in the laboratory. Results of analysis, however, are given only for samples that were mislabeled. In Table 1, complete analysis is recorded; but mislabeling, indicated by boldface type, is applied only to the items named above. Wholesaler's name is in boldface type.

Table 1

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, and Place Collected.	Variety of Seed, Lot Number, Origin	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Remarks
C-414	Clover	Agricultural Products Co., W. Kingston, R. I. Hooper's Hardware Co., So. Sudbury	White Dutch No. 25034	I. 98.00 F. 98.99	0.09 0.22	0.49 0.45	0.42 0.34	* 90.00 Inc. 2 1958 14 HS 68.23 4 1958		*Hard seed must be listed separately.
C-44	Clover	Washburn Electrical Co., Marion White Dutch No. 26721		I. 98.00 F. 99.45	0.09 0.00	0.49 0.28	0.42 0.27	76-14 67-23	3 1958 6 1958	Given formula totals less than 100%.

Table 1. Results of Inspection and Analyses of Field Seeds—Continued.

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, and Place Collected, Variety of Seed, Lot Number, Origin	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Remarks
Associated Seed Growers, Inc., Cambridge, N. Y.									
Mass. Correctional Institute, S. Bridgewater									
Colonial, No. 95720.....									
C-337	Bentgrass	L. * F 99.24	* 0.02	* 0.70	* 0.04	90.00 94.00	1/1958 4/1958	*Required information not stated. Colonial bentgrass declared but Highland Colonial bentgrass found.	
Colonial, No. 95720.....									
C-542 S	Bentgrass	L. * F 99.46	* 0.12	* 0.42	* 0.00	90.00 94.00	1/1958 6/1958	*Required information not stated. Colonial bentgrass declared but Highland Colonial bentgrass found.	
Better Turf Seed Co., Inc., Jersey City, N. J.									
F. Diehl & Son, Wellesley									
Highland, Lot No. (*).....									
C-437	Bentgrass	L 99.68 F 99.72	0.06 0.04	0.26 0.24	0.00 0.00	85.00 88.00	1/1958 5/1958	Name of labeler or seller not on tag. *Required information not stated.	
Creeping Red, Lot No. (*).....									
C-439	Fescue	L 95.22 F 97.31	0.18 0.00	4.15 2.30	0.45 0.39	90.00 83.00	1/1958 5/1958	Name of labeler or seller not on tag. *Required information not stated.	
(Origin—Canada)									
Lot No. (*).....									
C-438	Portulaca	L 90.10 F 90.64	0.70 0.53	9.20 8.47	0.00 0.36	87.00 83.00	1/1958 5/1958	Name of labeler or seller not on tag. *Required information not stated.	
(Origin—Denmark)									
Arthur R. Cone, Inc., Buffalo, N. Y.									
Amherst Farmers' Supply Co., Amherst									
Medium Red, No. 15 x 201.....									
(Origin—New York)									
B-262	Clover	L 99.78 F 96.27	0.10 0.41	0.06 0.29	0.06 0.03	70.20 81.9	3/1958 5/1958	Excessive Noxious Weeds, 17 Buckhorn plantain per ounce labeled—42 per ounce found.	
Farm Service, General Mills, No. Abington.									
Medium Red, No. 15 x 197.....									
(Origin—New York)									
C-497	Clover	L 99.96 F 99.91	0.04 0.06	0.00 0.01	0.00 0.02	73.24 75.23	3/1958 5/1958	Noxious Weeds not declared but 7 Buckhorn plantain per ounce found.	

C-496	Fescue	Creeping Red, No. 36-244.....	L	97.90	0.05	1.85	0.20	88.00	2 1958 6 1958	Inert Matter exceeds that stated.
			F	96.14	0.00	3.70	0.16	92.00		
C-495	Fescue	Kentucky 31, No. 36-249.....	L	99.72	0.04	0.20	0.02	92.00	11 1957 6 1958	Given formula totals less than 100%.
			F	99.65	0.19	0.16	0.00	95.00		
B-265	Corn	Hale's Grain Store, Palmer Yellow Sweepstakes, No. 80 x 653. (Origin—New Jersey)	L	99.50	0.00	0.50	0.00	84.00	3 1958 8 1958	Germination below that stated.
			F	99.80	0.00	0.20	0.00	38.00		
C-500	Rye	McKenzie & Winslow, Inc., Fall River Rosen Winter, No. 56 x 373	L	99.00	0.03	0.57	0.40	80.00	7 1957 10 1957	Germination below that stated.
			F	98.53	0.02	0.98	0.47	51.00		
C-564	Barley	Wayne Feed Supply Co., Inc., Ayer Certified Erie, No. 52 R 375.....	L	99.79	0.00	0.0	0.01	90.00	1 1958 7 1958	Germination below that stated.
			F	99.65	0.00	0.35	0.00	63.00		
C-548	Clover	Withmore Stores, Clinton Medium Red, No. 15 x 201	L	99.78	0.10	0.06	0.06	70-30	3 1958 6 1958	Excessive Nodules. Woods. 17 Buckhorn plants in culture labeled. 34 per ounce found.
		(Origin—New York)	F	99.63	0.14	0.17	0.06	75-18		
B-292	Canary Grass	Comstock, Ferre & Co., Wethersfield, Conn. Weld & Beck Co., Southbridge Red, No. 3163	L	98.58	0.10	1.28	0.04	90.00	3 1958 8 1958	Germination below that stated.
			F	97.98	0.00	2.02	0.00	73.00		
B-288	Alfalfa	Crayer-Dickinson Co., Buffalo, N. Y. Belchertown State School, Belchertown Certified Vernal, No. 27-235	L	99.78	0.10	0.12	0.00	80-12	3 1958 6 1958	*Required information not stated.
		(Origin—*)	F	99.71	0.02	0.27	0.00	86.3		
C-541	Alfalfa	Mass. Correctional Institute, So. Bridgewater Certified Ranger, No. 27-173.....	L	99.78	0.02	0.20	0.00	*96 Invs. HS	1 1958 5 1958	*Hard Seed must be stated separately.
		(Origin—Cal.)	F	99.88	0.00	0.12	0.00	93-2		
C-289	Alfalfa	Wrentham State School, Wrentham Certified Ranger, No. 27-168	L	99.60	0.04	0.32	0.04	90.4	1 1958 3 1958	Required information not stated.
		(Origin—*)	F	99.73	0.00	0.77	0.00	91.1		

Table 1. Results of Inspection and Analyses of Field Seeds—Concluded

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, and Place Collected.	Variety of Seed, Lot Number, Origin	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Remarks
Crawford's Wholesale Garden Supply Co., East Providence, R. I.										
C-434	Clover	Mannick Supply Co., Framingham	Variety (*), Lot No. (*), L F	* 98.81	* 0.02	* 0.25	4 0.92	72-24	* 5/1958	* Required information not stated.
C-436	Portulaca		Lot No. (*), L F	88.00 86.31	0.30 0.93	11.40 11.97	0.30 0.79	85.00 93.0	* 5/1958	* Required information not stated.
C-440	Bluegrass	Woodell Seed Co., New Bedford Melion Kentucky, Lot No. (*), L F (Origin—Oregon)	..... L F	85.10 82.60	0.54 0.19	9.16 12.79	7.20 4.42	75.00 67.00	3/1957 12/1957	* Required information not stated. (given formula totals more than 100%, Inert matter exceeds that stated.)
The Albert Dickinson Co., Chicago, Ill.										
B-205	Redtop	Community Feed Stores, Inc., E. Longmeadow No. 41740. L F	..... L F	95.20 93.05	2.20 0.54	2.60 2.88	0.00 3.53	90.00 93.00	2/1958 4/1958	Other Crop Seed not stated but 3.53% found.
Chas. C. Hart Seed Co., Wellesfield, Conn.										
B-208	Ryegrass	Community Feed Stores, Inc., E. Longmeadow Perennial, Lot No. (*), L F	..... L F	99.00 96.56	0.25 0.02	0.50 0.29	0.25 3.13	90.00 94.00	2/1958 4/1958	* Required information not stated. Other Crop Seed exceeds that stated.
Lee Patten Seed Co., Arlington, Mass.										
B-230	Bluegrass	Frank Howard, Inc., Pittsfield Kentucky, No. BB 33. L F	..... L F	85.02 86.75	0.33 0.09	14.53 13.09	0.12 0.07	75.00 54.00	2/1958 7/1958	Germination below that stated.
Pedigreed Seed Co., Jersey City, N. J.										
C-382	Clover	Atlantic & Pacific Tea Co., Somerville White, Lot No. (*), L F (Origin—Idaho)	..... L F	99.00 99.14	0.40 0.05	0.42 0.21	0.18 0.60	75-15 91-2	2/1958 4/1958	* Required information not stated.

C-581	Timothy	Wordell Seed Store, New Bedford No. 9132.....	L..... F.....	99.70 99.36	0.12 0.28	0.15 0.31	0.03 0.05	90.00 90.00	3 1958 6/1958	Noxious Weeds not declared but 40 Buckhorn plantain per ounce found.
C-7	Rye	Wm. G. Scarlett & Co., Baltimore Scarlett Warehouse, Winchester Winter, No. 12404.....	L..... F.....	92.00 99.49	0.15 0.04	1.70 0.46	0.5 0.01	90.00 91.00	8 1957 10 1957	"Winter" not a variety. Excessive Noxious Weeds, 4 Wild Oat per pound labeled, 10 per pound found.
C-351 S	Brome Grass	Worcester State Hospital, Worcester Lincoln, No. 5928..... (Origin—Kansas)	L..... F.....	92.50 85.12	1.00 0.62	6.50 10.92	0.00 0.04	87.00 91.00	9/1957 4 1958	Inert Matter exceeds that stated.
C-351 S	Peas	Canada Field, No. 6370.....	L..... F.....	98.0 99.70	0.0 0.00	1. 0.05	0.00 0.25	93.50 97.00 HS	11 1957 4/1958	Hard Seed must be listed separately.
C-5	Rye	Stanford Seed Co., Buffalo, N. Y. City Grain Co., Marlboro Rosen Winter, No. 6785.....	L..... F.....	96.46 98.42	0.02 0.06	1.81 0.17	1.71 1.35	85.00 91.00	8 1957 9 1957	Noxious Weeds not declared but 23 Corncockle per pound found.
C-588	Corn	Withmore Stores, New Bedford Westbranch Sweepstakes, No. 3766 (Origin—Ohio)	L..... F.....	99.00 99.80	0.00 0.00	1.00 0.20	0.00 0.00	85.00 72.00	1 1958 6 1958	Germination below that stated.
B-97	Clover	Whitney Seed Co., Inc., Buffalo, N. Y. Whitney Seed Co. E. Deerfield Medium Red, No. 50687..... (Origin—Canada)	L..... F.....	99.36 99.51	0.24 0.04	0.36 0.30	0.04 0.15	85.5 75.10	1 1958 3 1958	Excessive Noxious Weeds, 7 Buck- horn plantain per ounce labeled, 16 per ounce found.
B-274	Redtop	No. 40590.....	L..... F.....	96.20 95.70	0.20 0.96	3.40 3.10	1.20 0.24	82.00 90.00	2 1958 6 1958	Given formula totals more than 100%.
C-606	Redtop	Essex Co. Cooperative Assoc., Topsfield No. 40590.....	L..... F.....	96.20 96.39	0.20 0.61	3.40 2.86	1.20 0.14	82.00 90.00	2 1958 7/1958	Given formula totals more than 100%.

Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261 C.

Each mixture of agricultural seeds shall be labeled to show the commonly accepted name and variety of each agricultural seed component in excess of five percent of the whole and the percentage, by weight, of each in the order of its predominance. The word "mixture" or the word "mixed" shall be shown conspicuously on the label. Other label requirements for mixtures are the same as those for field seeds; hence, are not repeated here since they will be found under Table 1.

Eighty-eight mixtures were received, but only fifty were found to vary sufficiently from the label requirements to justify the statement of complete analysis in this table. Items which are mislabeled, also the name and address of the wholesaler, are printed in boldface type.

Table 2

Lab. No.	Wholesale Distributor, Dealer When Than Wholesale Distributor, Place Collected, Brand Name, Lot Number and Components	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
C-508	Agricultural Products Co., West Kingston, R. I. John Hinkley & Son Co., Yarmouthport Cape Cod Lawn Seed Mixture, No. 10129										
						96.70	0.30	2.79	0.30	2	1958
						98.25	0.14	1.54	0.07	6	1958
	Components:										
		Chewines Fescue	39.20								
		Domestic Ryegrass	26.46								
		Creeping Red Fescue	14.70								
		Kentucky Bluegrass	8.50								
	*Colonial Bentgrass		4.90								
	Seaside Bent. <i>Agrostis</i> spp. (Highland & Seaside bentgrass)		2.94								
	<i>Festuca</i> spp. (Chewings & Creeping Red)										

Germination below that stated.
Percentage less than that stated.
Colonial bentgrass not sufficient.
Highland Colonial bentgrass found.

C-413	Hooper's Hardware Co., So. Sudbury Old Homestead Well-Balanced Formula, No. 10124									
	Components:	Lb.	Per cent	Lb.	Per cent	Lb.	Per cent	Lb.	Per cent	Notes:
	Kentucky Bluegrass	42.50	43.41	80.00	80.00	91.60	0.30	91.60	0.30	Other crop seed added that
	Chewings Fescue	24.50	19.82	90.00	91.00	90.00	0.10	90.00	0.10	added.
	*Colonial Bentgrass	14.70	...	90.00	...	...	...	...	...
	Redtop	9.90	...	88.00	90.00	...	...	...	...
	<i>Agrostis</i> spp. (Highland bentgrass & Redtop)	...	26.85	...	...	...	...	...	...	Colonial bentgrass not sufficient, Highland Colonial bentgrass added.
C-415	Village Green Mixture, No. 25027									
	Components:	Lb.	Per cent	Lb.	Per cent	Lb.	Per cent	Lb.	Per cent	Notes:
	Chewings Fescue	23.52	24.77	85.00	88.00	94.72	0.45	94.72	0.45	Green to white seed, more than
	R. T. Perennial Ryegrass	16.66	17.68	90.00	97.00	96.43	0.67	96.43	0.67	100%.
	E. Y. 31 Fescue	13.30	13.05	75.00	75.00	...	...	...	...
	Kentucky Bluegrass	11.90	12.27	75.00	74.00	...	...	...	...
	*Danish Bluegrass	11.70	12.27	80.00	87.00	...	...	...	...
	Common Ryegrass	9.80	8.60	90.00	97.00	...	...	...	...
	Highland Bentgrass	7.84	7.79	90.00	90.00	...	...	...	...
C-417	Lawn & Garden Center, No. Dartmouth Kingston Mixture, No. 10255									
	Components:	Lb.	Per cent	Lb.	Per cent	Lb.	Per cent	Lb.	Per cent	Notes:
	Chewings Fescue	49.00	49.11	90.00	96.00	93.45	0.30	93.45	0.30	
	Kentucky Bluegrass	29.75	16.94	85.00	79.00	95.60	0.25	95.60	0.15	
	Astoria Bentgrass	14.70	...	90.00	...	...	...	...	...	Percentage less than that stated, declared by Highland Colonial bentgrass brand.
	Highland Bentgrass	...	16.09	...	88.00	...	...	...	...	Found but not declared.
	<i>Poa trivialis</i>	...	13.46	...	93.00	...	...	...	...
C-418	Washington Electric Co., Inc., Madison Premium Mixture, No. 10186									
	Components:	Lb.	Per cent	Lb.	Per cent	Lb.	Per cent	Lb.	Per cent	Notes:
	Chewings Fescue	39.20	...	90.00	...	97.70	0.30	97.70	0.30	Percentage less than that stated, % Colonial bentgrass not sufficient, Highland Colonial bentgrass added.
	Domestic Ryegrass	26.46	...	85.00	...	97.90	0.17	97.90	0.00	
	Creeping Red Fescue	14.70	...	90.00	...	...	...	...	...
	Kentucky Bluegrass	8.50	4.60	75.00	82.00	...	...	...	...
	*Colonial Bentgrass	4.90	...	90.00	...	...	...	...	...
	Seaside Bentgrass	2.94	...	90.00	...	...	...	...	...
	<i>Agrostis</i> spp. (Highland & Seaside Bentgrass)	...	8.30	...	93.00	...	...	...	...
	<i>Festuca subsp.</i> & Creeping Red Fescue	...	55.51	...	92.00	...	...	...	...

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Brand Name Lot Number and Components	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
C-620	Associated Seed Growers, Inc., Cambridge, N. Y. Bennett Hardware Co., Lowell Mac Cambridge Lawn Seed Mixture, No. H 301 E.....					L		1.06	0.34	3/1958	Inert Matter exceeds that stated. Other Crop Seed exceeds that stated.
						F		2.82	4.39	7, 1958	
	Components:										
	Perennial Ryegrass.....	39.80	30.67	90-Ore.	94.00		0.11				Percentage less than that stated.
	Domestic Ryegrass.....	34.75	20.74	90-Ore.	94.00		0.33				Percentage less than that stated.
	Alta Tall Fescue.....	14.86	24.13	85-Ky.	88.00						Percentage exceeds that stated.
	Astoria Bentgrass.....	4.95	9.37	85-Ore.	92.00						Percentage exceeds that stated.
	Kentucky Bluegrass.....	4.13	7.55	75-Mo.	71.00						Percentage exceeds that stated.
	Belt Seed Co., Baltimore, Md.										
C-2 S	Mass. Department Public Works, Peabody Slope Mixture, No. 8936.....					L		1.85	0.5	2/1958	Inert Matter exceeds that stated. Other Crop Seeds exceeds that stated.
						F		5.76	2.51	9/1958	
	Components:										
	Chewings Fescue.....	24.25	.....	85.00	.....						Declared but Creeping Red fescue found.
	Alta Fescue.....	29.10	26.22	85.00	77.00						Germination below that stated.
	Domestic Ryegrass.....	19.60	24.43	90.00	96.00						Percentage exceeds that stated.
	Redtop.....	13.80	6.39	90.00	21.00						Percentage less than that stated.
	White Clover.....	9.80	.....	80.10	91.00						Germination below that stated.
	Creeping Red Fescue.....	.....	22.79	.....	.....						Declared but Alsike clover found.
	Alsike Clover.....	.....	11.71	.....	75.25						

Mass. Department Public Works, Sudbury

C-649 S Plot Mixture, No. 1662. L. F. 85.20 1.00 13.20 0.60 4/1958
 90.70 0.87 6.12 2.31 7/1958
 Other Crop Seed exceeds that stated.

Components:

Creeping Red Fescue. 30.80
 Chewings Fescue. 70.00
 Redtop. 18.40
 Kentucky Bluegrass. 17.94
Festuca spp. 80.00
 (Creeping Red & Chewings Fescue) 46.18
 Common Ryegrass. 9.00
 95.00

Found but not declared.

Mass. Department Public Works, Taunton

C-648 S Plot Mixture, No. 1662. L. F. 85.20 1.00 13.20 0.60 4/1958
 87.91 0.78 5.23 6.08 7/1958
 Other Crop Seed exceeds that stated.

Components:

Creeping Red Fescue. 30.80
 Chewings Fescue. 70.00
 Redtop. 18.40
 Kentucky Bluegrass. 24.38
Festuca spp. 80.00
 (Creeping Red & Chewings Fescue) 43.32
 88.00

Percentage exceeds that stated.

Metropolitan District Commission, Medford

C-3 S Mixture, No. 1742. L. F. 96.20 0.30 3.20 0.30 6/1958
 96.48 0.25 2.01 1.26 9/1958
 Components not listed in order of predominance.

Components:

Illiahee Ct. Red Fescue. 44.10
 Highland Bentgrass. 24.50
 Redtop. 27.60
A. pratensis spp. 54.62
 (Highland Bentgrass & Redtop)

Declared, but Creeping Red Fescue and some Illiahee found.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesale Distributor Place Collected, Brand Name, Lot Number and Components	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
C-428	Crawford's Wholesale Garden Supply—Continued Highland Mills Co., Newton Highlands Park View Mixture, No. 10193.										
	Components:										
	Domestic Ryegrass.....	34.40	30.06	90.00	93.00	95.10	0.60	3.70	0.60	3 1958	Noxious weeds, not declared, but 12 Buckhorn plantain per ounce found.
	Perennial Ryegrass.....	19.60	22.26	90.00	93.00	97.13	0.60	1.26	1.01	5 1958	
	Ky. 31 Fescue.....	19.00	17.71	75.00	81.00						
	Timothy.....	14.00	17.31	80.00	82.00						
	*Danish Bluegrass.....	6.20	7.72	80.00	86.00						
	White Clover.....	1.90	2.07	70-15	76-21						
											*Not accepted common name for <i>Poa trivialis</i>
C-635	Lawrence Bros. Grain Co., Falmouth Cape Cod Mixture, No. 10139.										
	Components:										
	Chewings Fescue.....	39.20		90.00		96.70	0.30	2.70	0.30	3 1958	*Colonial Bentgrass not sufficient, Highland Colonial Bentgrass found.
	Domestic Ryegrass.....	26.46	30.85	90.00	94.00	96.27	0.33	2.87	0.53	7 1958	
	Creeping Red Fescue.....	14.70		90.00							
	Kentucky Bluegrass.....	8.50	7.93	75.00	82.00						
	*Colonial Bentgrass.....	4.90		90.00							
	Seaside Bentgrass.....	2.94		90.00							
	<i>Agrostis</i> spp. (Highland & Seaside bentgrass)		6.86		93.00						
	<i>Festuca</i> spp. (Creeping Red & Chewings Fescue)		50.63		95.00						

Arthur R. Cone, Inc., Buffalo, N. Y.
F. Diehl & Son, Wellesley
Shade & Sline, No. 38 x 651

C-448

Component:		L		F		3 1958		6 1958		Word "mixed" or "mixture" required. Other Crop Seed exceeds that stated.
Red Fescue	33.95	80.00	93.99	0.45	5.21	0.35				
Perennial Ryegrass	19.80	93.00								
Kentucky Bluegrass	12.75	75.00								
<i>Poa trivialis</i>	12.75	80.00								
Alta Fescue	12.74	85.00								
White Clover	2.00	91.8								
Common Ryegrass	16.35	93.00								

Found hit not declared.

Cover Lawn Seed Co., Baltimore, Md.

Kastner-Sherman Corp., Waltham
Top Kick Mixture, No. FPT-8

C-148

Components:		L		F		1 1958		2 1958		Other Crop Seed exceeds that stated.
Italian Ryegrass	73.20	85.00	40.90	0.60	8.70	0.80				Percentage less than that stated.
Perennial Ryegrass	11.60	85.00	32.56	0.66	6.70	3.19				Percentage exceeds that stated.
Timothy	3.10	67.00	9.55							Percentage exceeds that stated.
Alta fescue	2.00	76.00	6.44							Percentage exceeds that stated.

Percentage less than that stated.
Percentage exceeds that stated.
Percentage exceeds that stated.
Percentage exceeds that stated.

Kieselin Hardware Co., Springfield

Premium Park Grass Seed Mixture, No. FPT 8-P

B-209

Component:		L		F		1 1958		5 1958		Other Crop Seed exceeds that stated.
Italian Ryegrass	73.20	85.00	89.90	0.60	8.70	0.80				
Perennial Ryegrass	11.60	85.00	93.44	0.04	3.91	2.61				
Timothy	3.10	60.00								
Alta Tall Fescue	2.00	66.00								

Percentage exceeds that stated.

Pierce Hardware Co., Taunton

Seed Mixture, No. 23501

C-118

Components:		L		F		8 1957		10 1957		*Required information not given.
KV-31 Fescue	42	95.85	* 97.66	* 0.42	* 0.71	* 1.21				
Common Ryegrass	40	98.90								
Timothy	10	98.60								
Redtop	8	92.90								

*Generation statements included, leading actual generation percentage must be given.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Brand Name, Lot Number and Components	Components		Germination		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
Thomas F. Culkeen, Charlestown, Mass. Metropolitan District Commission, Canton C-647 S Special, No. 205											
	Components:					L	F				
	Chewings Fescue	24.83	26.50	90.00	95.00	93.56	0.27	5.98	0.19	3 1958	Ward "mixed" or "mixing" required.
	Meadow Fescue	22.35	23.33	75.00	24.00	95.16	0.27	4.44	0.13	7 1958	
	Domestic Ryegrass	19.80	19.17	90.00	97.00						Germination below that stated.
	Poa trivialis	13.68	13.79	85.00	79.00						
	Kentucky Bluegrass	12.90	12.37	75.00	81.00						
Metropolitan State Hospital, Waltham C-422 S Special Mixture, No. 175											
	Components:					L	F				
	Kentucky Bluegrass	29.40	30.97	75.00	80.00	98.07	0.25	1.68	0.00	2 1958	Inert Matter exceeds that stated.
	Domestic Ryegrass	24.75	16.51	90.00	99.00	93.71	0.08	6.21	0.00	5 1958	
	Chewings Fescue	19.70		90.00							Percentage less than that stated.
	Creeping Red Fescue	9.80		85.00							
	Redtop	9.50		90.00							
	Colonial Bent (High Type)	4.92		85.00							
	Festuca spp.		29.03		93.00						
	(Chewings & Creeping Red)										
	Agrostis spp.		17.10		92.00						
	(Redtop & Highland Bentgrass)										
Chas. C. Hart Seed Co., Wethersfield, Conn. Wayne Feed Supply Co., Inc., Ayer C-560 Elm Tree Lawn Seed Mixture, No. D-6											
	Components:					L	F				
	Italian Ryegrass	30.75	31.31	90.00	97.00	96.90	0.39	2.71	0.00	1 1958	#Colonial Bentgrass not sufficient, Highland Colonial Bentgrass found.
	Chewings Fescue	30.45		90.00		96.51	0.70	2.65	0.14	6 1958	
	Creeping Red Fescue	18.45		90.00							
	Kentucky Bluegrass	6.82	7.20	75.00	71.00						
	Colonial Bentgrass	5.93		85.00							
	Rough Bluegrass	4.50	6.22	90.00	84.00						
	Festuca spp.		47.17		88.00						
	(Chewings & Creeping Red)										
	Highland Bentgrass		4.61		88.00						

Budd D. Hawkins Co., Inc., Wethersfield, Conn.

E. C. Adkins & Co., Florence													
Builders Blend Grass Seed, No. A-2				L		F							
Components:													
Italian Ryegrass				90.00		92.00							
Ky. No. 31 Tall Fescue		47.61		41.01		90.00		98.62		1.02		1 1958	
Chewings Fescue		20.53		23.54		90.00		92.15		0.36		5 1958	
		19.65				90.00				4.58			
White Dutch Clover				90.00		84.10							
Kentucky Bluegrass		0.98		0.74		75.00							
Festuca spp.		0.85		74.00		92.00							
(Chewings & Commercial)		22.91											

Inert matter exceeds that stated.
Other Crop Seeds exceed that stated.Germination below that stated.
Pecked for a mixture of Chewings and Commercial Red Fescue found.

Home & Garden Products Co., Philadelphia, Penna.

Tedeschio's Super Market Warehouses, Rockland													
Clover Joy Lawn Clover, No. 586-9				L		F							
Components:													
White Clover				96.1									
*Suckling Clover		51.75		57.70		70.15		98.75		0.45		2 1958	
		47.00				70.15		57.70		0.13		5 1958	

*Suckling Clover is a weed in Mass.

Doughton Seed Co., Arlington, Mass.

D. Diehl & Son, Wellesley													
Diehl's All Purpose Lawn Seed Mixture, No. 358				L		F							
Components:													
Creeping Red Fescue		20.40		85.00									
Kentucky Bluegrass		21.25		75.00		71.00							
Chewings Fescue		19.60		85.00		83.00							
*P. a. trivialis		13.80		85.00									
*Colonial Bentgrass		9.80											
Festuca spp.				51.67		97.00		93.85		0.30		2 1958	
(Creeping Red & Chewings)								94.01		0.31		5 1958	
Highland Perennials													

*Colonial Bentgrass not sufficient.
Highland Colonial Bentgrass found.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261 C—Continued.

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Brand Name, Lot Number and Components	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
Druid Hill Park Seed Corp., Baltimore, Md.											
C-418	Lockhart Hardware Co., Natick Premium "51" Druid Hill Park Mixture, No. C-78.					L F					
	Components:										
	Alta Tall Fescue.....	29.24		75.00							
	Perennial Ryegrass.....	29.12		85.00							
	Ky. 31 Tall Fescue.....	20.25	40.55	75.00	93.00	94.15	0.40	1.95	3.50	2 1958	
	Meadow Fescue.....		7.62	75.00	93.00	99.35	0.14	0.46	0.05	5 1958	
	Creeping Red Fescue.....		8.96	70.00							
	Tall Fescue.....	5.31	42.22	95.00	90.00						
	(Alta & Ky. 31)										Percentage exceeds that stated.
Flower Lane Farm, Martinsville, N. J.											
C-379	Stop & Shop, Inc., South Boston, Mass. Magic Carpet Mixed Grass Seed (#8).					L F					
	Components:										
	Perennial Ryegrass.....	28.75	23.96	90-Ore.	96.00	97.13	0.23	2.24	0.50	1 1958	*Required information not stated.
	Domestic Ryegrass.....	26.62	33.55	90-Ore.	96.00	98.88	0.03	0.97	0.12	4 1958	Given formula exceeds 100%.
	Creeping Red Fescue.....	14.65	13.00	75-Can.							
	Ky. 31 Fescue.....	14.61	15.69	80-Ky.	84.00						
	Timothy.....	9.00	9.78	80-Mo.	96.00						
	*Colonial Bentgrass.....	3.50		90-Ore.							*Colonial Bentgrass not sufficient.
	Highland Bentgrass.....		2.90		94.00						*Colonial Bentgrass not sufficient.
											Highland Colonial Bentgrass 10 found.
Hubbard Hall Seed Div., Waterbury, Conn.											
B-242	E. M. Gulow & Co., Inc., Turners Falls					L F					
	Components:										
	Creeping Red Fescue.....	29.11	26.23	85.00	96.00	94.66	0.31	4.75	0.28	1 1958	
	Perennial Ryegrass.....	24.89	30.61	90.00	97.00	95.00	0.32	4.68	0.00	7 1958	
	Kentucky Bluegrass.....	17.00	15.82	75.00	79.00						
	<i>Poa trivialis</i>	13.81	13.67	85.00	95.00						
	Highland Colonial Bentgrass.....	9.85	8.67	90.00	92.00						Percentage exceeds that stated.

Independence Hall Seed Co., Baltimore, Md.

Boston Supply Co., Boston

All Perennial Mixture, No. 27 N E.A.

C-258

Components:

Kentucky Bluegrass

Creeping Red Fescue

Meadow Fescue

Chewings Fescue

Alta Tall Fescue

Perennial Ryegrass

Ky. 31 Fescue

Festuca spp.

Creeping Red N Chewings

Tall Fescue

Alta & Ky 31

Timothy

13.38
13.28
13.19
13.18
13.14
12.96
12.66
...
23.61
24.05
8.52

74.00
60.00
92.00
60.00
70.00
85.00
70.00
62.00
82.00
73.00

L

F

91.29
95.710.29
0.502.93
2.034.97
1.7612 1957
4 1958

Found high and dead.

Independence Hall Seed Co., Baltimore, Md. Continued

Kievit-Hardway Co., Inc., Springfield

Quick Sprout Mixture, No. C-58

B-106

Components:

Ky 31 Tall Fescue

Perennial Ryegrass

Timothy

Alta Tall Fescue

Italian Ryegrass

Kentucky Bluegrass

White Clover

Tall Fescue Ky 31 N Alta

24.02
24.17
23.60
12.14
9.90
0.70
0.55
0.55
20.78

75.00
80.00
75.00
75.00
80.00
70.00
82-3
60-20
72.00

L

F

94.56
95.700.60
0.223.94
3.680.90
0.401 1957
5 1958Non-top weeds not detected, but
15 Buckhorn plantain per ounce
found.

Percentage exceeds that stated.

Percentage exceeds that stated.

Percentage less than that stated.

Lawn Products Co., Philadelphia, Penna.

First National Seeds, Scranton

Green Grass Seed Mixture, No. 622 19

C-24

Components:

Kentucky Bluegrass

Chewings Red Fescue

Creeping Red Fescue

Colonial Bentgrass

Festuca spp.

Creeping Red N Chewings

Redtop

34.00
24.25
24.00
9.75
...
...
...

78 Mo.
88 Oyo.
85 Can.
85 Oyo.
...
...
...

60.00
57.00
93.00

L

F

92.00
91.930.35
0.457.50
7.250.15
0.372 1957
1 1958

Germination below that stated.

Declared low Redtop found.
Germination below that stated.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Brand Name, Lot Number and Components	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
C 484	Metropolitan Seed Corp., Jersey City, N. J.										
	Starr Market Warehouse, Watertown										
	Starr Lawn Seed Mixture, No. 38M-58,										
	..... L										
	..... F										
	Components:										
	Creeping Red Fescue.....	43.62	41.77	85.00	92.00						
	Kentucky Bluegrass.....	17.11	16.64	75.00	77.00			5.63	0.48	3/1958	
	Common Ryegrass.....	13.50	14.62	90.00	97.00			5.82	0.13	7/1958	
	Merion Kv. Bluegrass.....	9.65	9.56	80.00	78.00						
	Redtop.....	4.78	.....	90.00	.....					
	Astoria Bentgrass.....	4.88	.....	80.00	.....					
	Axiotis spp. ....	.....	11.27	.....	94.00						Declared but Highland Bentgrass found.
	(Redtop & Highland Bent)										
C-13	Northern Seed Co., E. Providence, R. I.										
	John Hinkley & Son Co., Yarmouthport										
	Cape Cod Lawn Seed, No. 23472.....										
	..... L										
	..... F										
	Components:										
	Chewings Fescue.....	39.20	36.49	90.00	90.00			2.70	0.30	/8/1957	Word "mixed" or "mixture" required.
	Domestic Ryegrass.....	26.46	24.29	90.00	98.00			1.84	0.33	11/1957	
	Creeping Red Fescue.....	14.70	.....	90.00	.....						Declared but none found.
	Kentucky Bluegrass.....	8.50	.....	75.00	.....						Declared but none found.
	*Colonial Bentgrass.....	4.90	.....	90.00	.....						*Colonial Bentgrass not sufficient, Highland Colonial Bentgrass found.
	Seaside Bentgrass.....										
	Poa trivialis.....	2.94	.....	90.00	.....						Declared but none found.
	Tall Fescue.....	.....	10.70	.....	75.00						Found but not declared.
	Highland Bentgrass.....	.....	20.89	.....	84.00						Found but not declared.
	.....	.....	4.96	.....	95.00						

Declared but Highland Bentgrass found.

Word "mixed" or "mixture" required.

Declared but none found.
Declared but none found.
*Colonial Bentgrass not sufficient, Highland Colonial Bentgrass found.Declared but none found.
Found but not declared.
Found but not declared.

C-22	Cape Cod Lawn Seed Mixture, No. 23412.....			L F	96.70 97.43	0.30 0.61	2.70 1.45	0.30 0.51	8 1957 11/ 1957
	Components:								
	Chewings Fescue.....	39.20	90.00	97.00					
	Domestic Ryegrass.....	26.46	90.00	97.00					
	(Creeping Red Fescue).....	14.70	90.00						
	Kentucky Bluegrass.....	8.50	75.00	78.00					
	*Colonial Bentgrass.....	4.90	90.00	....				
	*Colonial Bentgrass not sufficient Highland Colonial Bentgrass and Redtop found. Declared but none found.								
	Seaside Bentgrass.....	2.94	90.00	....				
	<i>Agrostis</i> spp..... (Highland & Creeping Red)	....	9.86	94.00					
	<i>Festuca</i> spp..... (Creeping Red & Chewings)	....	37.40	95.00					
	Tall Fescue.....	....	12.12	90.00					
	Percentage below that stated. Found but none declared.								
C-510	House & Garden Shop, Osterville Cape Cod Lawn Seed Mixture, No. 10186.....			L F	96.70 97.46	0.30 0.19	2.70 1.79	0.30 0.56	3 1958 6 1958
	Components:								
	Chewings Fescue.....	39.20	90.00	98.00					
	Domestic Ryegrass.....	26.46	90.00	90.00					
	(Creeping Red Fescue).....	14.70	90.00	....				
	Kentucky Bluegrass.....	8.50	75.00	(*)					
	*Colonial Bentgrass.....	4.90	90.00	....				
	*Colonial Bentgrass not sufficient. Highland Colonial Bentgrass found. Percentage exceeds that stated.								
	Seaside Bentgrass.....	2.94	90.00	....				
	<i>Festuca</i> spp..... (Chewings & Creeping Red)	....	72.40	94.00					
	<i>Agrostis</i> spp..... (Highland & Seaside Bentgrass)	....	10.09	95.00					

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds Sections 261 B1 and 261 C Continued.

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Brand Name, Lot Number and Components	Components %		Germination %		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
Northern Seed Co., F. Providence, R. I. Continued											
C-516	Lawn & Garden Center, No. Dairymouth										
	Kingston Mixture, No. 25023					L 93.45	0.30	5.95	0.30	2, 1958	
						F 95.57	0.30	3.77	0.36	6/1958	
											Percentage less than that stated. Declared but Highland bentgrass and some Redtop found. Found but none declared.
Components:											
	Chewings Fescue	49.00	48.26	90.00	93.00						
	Kentucky Bluegrass	29.75	13.90	85.00	72.00						
	Astoria Bentgrass	14.70		90.00							
	<i>Poa trivialis</i>		17.67		89.00						
	<i>Alopecurus</i> spp.		15.74		91.00						
	(Highland Pergrass & Some Redtop)										
Page Seed Co., Greene, N. Y.											
C-636	Lawrence Bros. Grain Co., Lawrence					L 92.62	0.00	7.10	0.22	2 1958	Wood "mixed" or "mixture" required. Given formula totals less than 100%.
	Marvelawn, No. L 14758					F 94.33	0.17	5.33	0.17	8 1958	
											Percentage exceeds that stated.
											Percentage exceeds that stated.
Components:											
	Kentucky Bluegrass	29.25	23.77	75.00	76.00						
	Chewings Fescue	24.34	24.06	90.00	98.00						
	Perennial ryegrass	11.85	16.41	90.00	98.00						
	Timothy	11.36	10.03	85.00	94.00						
	Alta Tall Fescue	10.12	14.20	85.00	76.00						
	White Clover	5.70	5.86	80-5	86-3						

C-627 Lee Patten Seed Co., Arlington, Mass.
Schubert Hardware Co., No. Arlington
New Englander Lawn Seed Mixture No. N.E. 58

Components:	
Cleaving, Electric	29.40
Cleaving, Red	29.40
Cleaving, Red Paste	85.00
Perennial Ryegrass	12.65
Kentucky Bluegrass	10.20
Highland Bentgrass	9.80
Pasture slip	
Cleaving, Red N	16.84
Cleaving, Red N	4.47
Cleaving, Red N	65.76

Pedigreed Seed Co., Jersey City, N. J.						
Mass. Department of Public Works, Fannett						
C-646 - Slope Grass Seed Machine, No. S.M.581						
1	96.55	0.30	3.00	0.15	7	1954
1	97.76	0.17	1.98	0.09	7	1954

Commodity	2010	24.30	85.00	94.00
Alfa Presure	24.25	21.88	85.00	
Cratering Red Fescue	19.60	90.00	87.00	
Domestic Ryegrass	13.80	90.00	98.00	
Fancy Redtop	9.80	18.36	90.00	
White Clover		13.62	80.10	86.10

Prices are on a cash basis and include freight and handling charges. All prices are in dollars per ton.

Cat. No.	Special Number, No.	Year	Length	Weight	Sex	Locality	Collector
Wm. G. Seale	12485	1957	95.40	4.05	♂	1957	Seale
Metropolitan District Commissioner			94.78	4.65	♂	1957	Seale
Special Number, No.							

Component:	24.25	20.95	59.00
Meadow Fescue			90.00
Chewings Fescue	24.85	24.55	96.00
Doan's Ryegrass	19.90	19.60	90.00
Doan's Ryegrass	13.50	15.61	75.00
<i>Poa trivialis</i>	2.90	11.07	77.00
Kentucky Bluegrass			81.00

Lab. No.	Wholesale Distributor, and NaBrine, Lot Number, and Components of Each Mixture, Dealer When Other Than Wholesale Distributor, and Place Collected	Components		Germination		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
C-463	O. M. Scott & Sons, Marysville, Ohio A. E. Wells Hardware Co., Med. old Scott's Bluegrass Lawn Seed Blend No. 1515-1					95.38 92.08	0.09 0.10	4.54 7.32	0.00 0.50	1 1957 7 1958	Inert Matter exceeds that stated.
	(Components)										
	Kentucky Bluegrass.....	35.76		65 la.							
	Kentucky Bluegrass.....	23.46		75 S.D.							
	Merion Ky. Bluegrass.....	25.12	26.25	75 Ore.	72.00						
	Delta Ky. Bluegrass.....	11.04		75 Wash. Ore.							
	Kentucky Bluegrass.....		65.83		72.00						
C-554	Seaboard Seed Co., Philadelphia, Penna. Raymond S. Inc., Boston Patriot All Perennial Mixture, No. 500-189					92.42 86.39	0.40 2.78	6.93 8.42	0.25 2.41	2 1958 7, 1958	Weed Seed exceeds that stated. Other Crop Seed exceeds that stated.
	(Components)										
	Kentucky Bluegrass.....	25.50	23.63	75.00	87.00						
	Highland Colonial Bentgrass.....	14.70	12.27	85.00	95.00						
	Merion Ky. Bluegrass.....	10.20	8.75	80.00	78.00						
	Creeping Red Fescue.....	9.80		85.00							
	Perennial Ryegrass.....	9.31	11.00	88.00	94.00						
	<i>Poa trivialis</i>	9.09	9.32	88.00	85.00						
	Chewings Fescue.....	8.82		88.00							
	Idaho White Clover.....	5.00	2.45	70-15	73-14						Idaho is not a variety name it indicates origin.
	<i>Festuca</i> spp.....		18.97		97.00						
	(Creeping Red & Chewings)										
C-457	Stanford Seed Co., Buffalo, N. Y. Withmore Warehouse, Framingham Reliable Lawn Seed Mixture, No. 5003 P.					85.29 84.41	1.00 0.59	12.71 12.57	1.00 2.43	3/1958 7/1958	Other Crop Seed exceeds that stated.
	(Components)										
	Domestic Ryegrass.....	39.60	38.48	85.00	98.00						
	Chewings Fescue.....	19.40	16.57	85.00	90.00						
	Timothy.....	9.90	13.47	85.00	92.00						
	Canada Bluegrass.....	8.71	9.47	75.00	90.00						
	Kentucky Bluegrass.....	4.68	4.14	75.00	74.00						
	White Clover.....	3.00	2.28	80-5	62-32						Percentage exceeds that stated.

L. Tewele Seed Co., Milwaukee, Wis.

Dealer Supply Co., Springfield

P-189

Earth Carpet Red Label Lawn Seed Mixture No. X 6892

Other Crop Seed exceeds that stated.

1 1958
5 19580.23
0.233.22
3.4496.32
93.12L
F

Components:

Ky. 31 Fescue	34.30	35.49	85.00	96.00
Perennial Ryegrass	19.95	20.28	90.00	96.00
Common Ryegrass	19.93	15.80	90.00	96.00
Rough Bluegrass	13.59	12.38	85.00	86.00
Kentucky Bluegrass	8.55	9.17	75.00	84.00

Vaughan's Seed Store, New York, N. Y.

C. H. Symmes & Co., Winchester

C-367

Parks Sunny Lawn Mixture, No. 3008.

Components not listed in order of predominance.

3 1958
4 19580.00
0.047.02
5.8692.73
94.03L
F

Components:

Kentucky Bluegrass	32.30	75.00
Delta Ky. Bluegrass	20.58	80.00
Highland Bentgrass	13.75	85.00
Redtop	4.60	97.00
Chewings Fescue	21.50	83.00
Kentucky Bluegrass	55.18	88.00
Agrostis spp.	18.65	
Highland bentgrass & Redtop		

F. H. Woodruff & Sons, Inc., Milford, Conn.

Sklabicky Farm Supply, Inc., So. Dorchfield
Special Grass Seed Mixture No. 15274...

P-240

2 1958
4 19580.80
0.009.39
9.4289.30
90.29L
F

Components:

Chewings Fescue	38.80	35.69	85.00	91.00
Domestic Ryegrass	27.75	26.22	90.00	97.00
Kentucky Bluegrass	12.75	15.62	75.00	81.00
Redtop	7.00		80.00	
Colonial Bentgrass	3.00		85.00	
Agrostis spp.		12.76		93.00
(Redtop & Highland Bentgrass)				

Colonial Bentgrass not sufficient. Highland Colonial Bentgrass found.

Results of Inspection and Germination of Vegetable Seeds Sections 261 B2 and 261 C.

Each separate container of Vegetable Seeds must be labeled to indicate plainly the kind of seed and variety and the name and address of the person who labeled such seed or who sells, offers, or exposes it for sale. For seeds that germinate less than the Massachusetts Standard, the label must also indicate the percentage of germination exclusive of hard seeds, percentage of hard seeds if present, calendar month and year the test was completed, and the words "Below Standard" in not less than 8-point type. Date of test shall not be more than nine months old, exclusive of the month in which the test was completed. Seed that has a false or misleading label may not be sold or offered for sale.

Four hundred and ninety-one samples of vegetable seeds were received and tested in the laboratory; however, Table 3 includes only those samples that were found to be mislabeled with regard to requirements of the law.

The wholesaler's name, in all instances, and the germination for those samples of seed found below standard in germination are in boldface type. In samples for which the found germination is not in boldface, the germination is above standard but below germination stated.

Table 3

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Variety of Seed & Lot Number	Germination				
			Given		Found		Mass. Standard %
			%	Date of Test	%	Month of Test	
W. Atlee Burpee Co., Philadelphia, Penna.							
C-51 S	Bean	Taunton State Hospital, Taunton Bush Bean—Top Crop BP L 46, . . .	70*	12/1957	68	2/1958	75
C-294 S	Bean	Wrentham State School, Wrentham Bush Bean—French Horticultural . .	App. 89	1/1958	37	4/1958	75
Clark Hardware Co., Greenfield, Mass.							
B-151	Lettuce	Same Iceberg			10	3/1958	80
Chas. C. Hart Seed Co., Wethersfield, Conn.							
B-117	Bean	Community Feed Store, E. Longmeadow Bush Lima Fordhook 242, No. 623 . .	85	1/1958	30	4/1958	70
B-68	Lettuce	Federal Supply Co., Greenfield Simpson Early Curled	80	1/1958	73	3/1958	80
C-72	Onion	Pierce Hardware Co., Taunton White Globe	70	1/1958	55	3/1958	70
D. Landreth Seed Co., Philadelphia, Penna.							
C-309	Kale	Smith Mills Hardware Co., No. Dartmouth Dwarf Blue Curled Scotch	80		42	5/1958	75
Randolph Seed Co., Inc., Randolph, N. Y.							
C-511	Onion	Lawn & Garden Center, No. Dartmouth Red Wethersfield			38	7/1958	70

*Given germination below standard and not declared.

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Variety of Seed & Lot Number	Germination					
			Given		Found		Mass. Standard %	
			%	Date of Test	%	Month of Test		
Ross Bros., Co., Worcester, Mass.								
C-327	Squash	Same.....						
		Early Summer Straightneck, No. 1285.....	86	1 1958	67	4 1958	75	
		Woodruff's Triple "T" Seeds, Inc. Wethersfield, Conn.						
C-262	Radish	Oscar's Hardware & Paint Co., Seekonk						
		French Breakfast.....	75	12/1957	53	4/1958	75	
B-154	Lettuce	Woodlawn Supply Co., South Hadley						
		Simpson's Early Curled.....	80	11/1957	65	4/1958	80	

*Given germination below standard and not declared.

FIELD TESTS OF VEGETABLE SEEDS TYPE AND VARIETY STUDIES--SECTION 261 II

Conducted by the Seed Laboratory*

Again, for the 23rd year, field trials were conducted by the State Seed Laboratory to determine the trueness-to-type of certain kinds of vegetable seed offered for sale in the Commonwealth. Tests were run on sweet corn and radishes from a collection made by the State Seed Inspectors. These samples were taken by the Inspectors from 35 retail establishments, and represent the offerings of 26 wholesale seedsmen selling in the Commonwealth.

Forty-nine samples of sweet corn were field-tested. These forty-nine samples represented seventeen varieties. All corn varieties were hybrids, i.e., none were open pollinated. All samples of both corn and radish were subjected to laboratory germination tests prior to field testing.

The corn was planted May 27. Each sample was planted in duplicated 60-foot rows, with the seeds spread one foot apart in the rows and the rows three feet apart. Wherever possible an authentic check sample was included as a basis of comparison. Observations were made several times during the growing period and complete records were taken. All samples were found to be properly labeled.

Observations were also made to determine the number of "inbred" plants produced by the 120 kernels planted from each lot of hybrid seed. The term inbred for the purposes of this discussion is defined as "a plant uniform in gross characteristics owing to self or sib pollination for several generations." In these hybrid varieties the inbred plants stood out because of their smaller size and atypical or unmarketable ears.

The remarks found in the Field Performance column in Table 4 indicate the numbers of inbreds found. This column was figured on the total of the duplicate rows, i.e., the plants produced from 120 seeds.

The economic importance of inbred plants in a sample of hybrid sweet corn should be mentioned. An average acre of corn should yield 12,000 marketable ears, and if 5% of the plants are off-type to the extent that the ears are not marketable, the resultant loss would be 600 ears per acre. This is an example of how seed that is true-to-type, as well as of good quality otherwise, can pay off in dollars and cents.

On May 28th forty-eight lots of radish were planted in 12-foot rows with the rows 3 feet apart. All samples were duplicated at random in the field, and authentic check samples were included for all the varieties grown. All 48 lots were found to be labeled correctly, i.e., there were no violations to be reported.

*Waldo C. Lincoln, Research Instructor
Kenneth Pelton, Laboratory Assistant

Table 1. Laboratory Germination and Field Test Performance of Hybrid Sweet Corn, Amherst, Massachusetts.

Lab. No.	Variety	Wholesale Distributor, Dealer—When Other than Wholesale Distribution, Place Collected	Laboratory Germination, %	Field Performance
C-298	Spunkios C 13 x 3	Associated Seed Growers, Inc., Milford, Conn. Conley & Donnelly Co., Attleboro No. 34552-130	95	No "inbreds" found in a total of 69 plants.
C-313	Spunkios C 13 x 3	Ross Bros., Worcester, Mass. Same No. 1330	97	No "inbreds" found in a total of 64 plants.
C-296	Marcross C 13 x 6	Associated Seed Growers, Inc., Milford, Conn. Conley & Donnelly Co., Attleboro No. 54709-122	90	One off-type plant short and spindley and without an ear out of a total of 81 plants was called an "inbred."
B-113	Marcross	Chas. C. Hart Seed Co., Wetherfield, Conn. Community Feed Store, East Longmeadow No. 500	89	One "inbred" found in a total of 38 plants. The plant was suckerless, dwarf, and had very poor tassel development.
C-299	Marcross 13-6	D. Landreth Seed Co., Philadelphia, Penna. Smith-Mills Hardware Co., No. Dartmouth No. 1469	98	Two off-type plants in a total of 112 plants were called "inbreds." One plant had a purple tassel and the other plant was suckerless with a dwarf ear.
C-370	Marcross 13 x 6	Vaughan's Seed Store, New York, N. Y. Whitmore Grain Store, Concord No. 362-R	92	Four off-type plants in a total of 165 plants were called "inbreds." Three plants were dwarf with no laterals on the tassel and very late in maturing, and the fourth off-type plant had narrow leaves, and a small, tight tassel.
C-400	Marcross	F. H. Woodruff & Sons, Milford, Conn. Oscar's Hardware & Paint Co., Seekonk No. 49258	94	One "inbred" found in a total of 46 plants. The plant was dwarf, suckerless, and had very narrow leaves.

Table 4. Laboratory Germination and Field Test Performance of Hybrid Sweet Corn, Amherst, Massachusetts. (Continued)

Lab. No.	Variety	Wholesale Distributor, Dealer When Other than Wholesale Distributor, Place Collected	Laboratory Germination %	Field Performance
C-410	Matross	S. D. Woodruff & Sons, Inc., Orange, Conn. Lamson's Hardware Co., Marlboro No. 25813	87	Two "inbreds" found in a total of 35 plants. Both plants had dark purple anthers and were suckerless.
C-295	Golden Beauty	Associated Seed Growers, Milford, Conn. Conlon & Donnelly Co., Attleboro No. 53507-330	99	One off-type plant in a total of 90 plants was called an "inbred." The plant was dwarf and spindly with narrow leaves, and had no suckers.
C-276	Golden Beauty	Joseph Breck & Sons, Inc., Boston, Mass. Same No. 1	92	Three off-type plants that were very dwarf and with a tight and not too branched tassel out of 68 plants were called "inbred."
C-16 S	Golden Beauty	W. Allee Burpee Co., Philadelphia, Penna. Northampton State Hospital, Northampton No. 6235	90	Two off-type plants in a total of 79 were called "inbreds." One of these plants had a purple tassel and the other plant was very dwarf with the tassel not branched and with the ear close to the ground.
C-50 S	Golden Beauty	Taunton State Hospital, Taunton No. 25130	93	Four off-type plants in a total of 64 were called "inbreds." Three of these plants were dwarf, suckerless, and with a tight tassel. The other plant was dwarf with very dark leaves and stem.
C-2276	Golden Beauty	Comstock, Ferre & Co., Wethersfield, Conn. Wordell Seed Store, New Bedford	92	Six off-type plants in a total of 29 were called "inbreds." Four of these plants were very dwarf, late maturing, and the flag leaves more curled than normal. The other two plants were dwarf, spindly, and with no ear development.

Table 4. Laboratory Germination and Field Test Performance of Hybrid Sweet Corn, Amherst, Massachusetts. Continued

Lab. No.	Variety	Wholesale Distributor, Dealer When Wholesale Distributor, Place Collected	Laboratory Germination ,	Field Performance
C-315	Golden Beauty	Ross Bros., Worcester, Mass. Same No. 1329	98	Three off-type plants in a total of 62 were called "inbreds." Two of these plants were only 1½ feet tall with a small tassel at late silking date, and the other transformed at the ground level. The other plant was dwarf with very red stem.
C-385	Golden Beauty	F. H. Woodruff & Sons, Milford, Conn. Farm Bureau Assoc., Waltham No. 404242 A-1	93	Three off-type plants that were dwarf, suckerless and with a tight purple tassel in 85 plants were called "inbreds."
C-488	Seneca Beauty	Rob on Quality Seeds, Inc., Hall, N. Y. Magiath Farm, Concord No. 1158 L	97	Three "inbreds" found in a total of 112 plants. Two of these plants were dwarf, spindly, with narrow leaves, and the other plant was spindly, late in silking and had a dwarf stubby tassel.
C-297	Carmelcross	Associated Seed Growers, Inc., Milford, Conn. Conlon & Donnelly Co., Attleboro No. 53504-230	92	One off-type plant ten days late in maturing, suckerless, and with tassel not branched out of a total of 90 plants was called an "inbred."
C-217	Carmelcross	Essex Co. Cooperative Farming Assoc., Topsfield, Mass. Same No. 53504-140	97	No "inbreds" found in a total of 104 plants.
C-77	Carmelcross	Joseph Breck & Sons, Inc., Boston, Mass. Same	91	Three off-type plants in a total of 67 were called "inbreds." Two of these plants were dwarf, suckerless, and with purple anthers while the other plant was late with a spindly tassel that was only partially branched, and with flag leaves that were long and slender.

Table 4. Laboratory Germination and Field Test Performance of Hybrid Sweet Corn, Amherst, Massachusetts. Continued

Lab. No.	Variety	Wholesale Distributor, Dealer When Other than Wholesale Distributor, Place Collected	Laboratory Germination %	Field Performance
C-54 S	Cornelcross	W. Alice Burpee Co., Philadelphia, Penna. Taunton State Hospital, Taunton No. 5136 C. N. Y.	89	One "inbred" and seven off-type plants called "inbreds" were found in a total of 69 plants.
C-489	Cornelcross	Joseph Harris & Co., Rochester, N. Y. Magrath Farm, Concord No. 1790	98	Three off-type plants in a total of 108 were called "inbreds." One of these plants was dwarf, late, and had no branching of the tassel. The other two plants were dwarf, spindly with poor tassel development.
C-3, 3	Cornelcross	Vaughan's Seed Store, New York, N. Y. Whitmore Feed Store, Concord No. 25186	89	Twelve off-type plants out of a total of 67 were called "inbreds." All twelve plants were very dwarf and inbred less.
C-397	Cornelcross	F. H. Woodruff & Sons, Inc., Milford, Conn. Osad's Hardware & Paint Co., Seabrook No. 50789	97	Three off-type plants out of a total of 93 were called "inbreds." Two of these plants were dwarf, inbredless, and with tight stubby tassels while the other plant was very dwarf with a very low ear that was late in maturing.
C-485	Morning Star	Vaughan's Seed Store, New York, N. Y. De Vincent Bros., Waltham No. 322 A	97	No "inbreds" found in a total of 66 plants.
B-213	North Star	Joseph Harris & Co., Rochester, N. Y. Michael Wazeyzk, Hadley No. 1794	93	Two "inbreds" found in a total of 115 plants. Both of these plants were spindly with narrow leaves, weak tassels, and with ears close to the ground.
C-492	Harris Golden Cup	Magrath Farm, Concord No. 1778 NYF	99	One "inbred" found in a total of 97 plants. This plant was dwarf, very spindly, and with a very late silking date.
C-491	F. M. Cross	No. 1782	94	No "inbreds" found in a total of 107 plants.

Table 4. Laboratory Germination and Field Test Performance of Hybrid Sweet Corn. Amherst, Massachusetts. (Continued)

Lab No.	Variety	Wholesale Distributor, Dealer When Other than Wholesale Distributor, Place Collected	Laboratory Germination %	Field Performance
C-486	F. M. Cross	Tri-State Seed Co., Philadelphia, Penna. De Vincent Bros., Waltham	95	No "inbreds" found in a total of 111 plants.
C-383	Golden Security	F. H. Woodruff & Sons, Inc., Milford, Conn. Farm Bureau Assoc., Waltham No. 47871-A 1.....	86	One "inbred" and one off-type plant called an "inbred" found in a total of 87 plants. The "inbred" plant was dwarf, suckerless, spindly and with a very open tassel. The off-type plant called an "inbred" had dark red silk, was was suckerless, and was late in maturing.
C-399	Golden Security	Oscar's Hardware & Paint Co., Seekonk No. 49293.....	96	No "inbreds" found in a total of 82 plants.
B-239	Golden Cross Bantam	Associated Seed Growers, Inc., Milford, Conn. Frank Howard, Inc., Pittsfield No. 53509.....	98	One off-type plant dwarf, suckerless, late maturing, and with a small tight tassel out of 107 plants was called an "inbred."
C-97	Golden Cross Bantam	Joseph Breck & Sons, Inc., Boston, Mass. Same.....	99	Two off-type plants, suckerless and late in maturing, out of 82 plants were called "inbreds."
C-53 S	Golden Cross Bantam	W. Allee Burpee Co., Philadelphia, Penna. Taunton State Hospital, Taunton No. 6213 CN.....	88	Two off-type plants suckerless, dwarf, with narrow leaves, compact tassel, and a late silking date in a total of 59 plants were called "inbreds."
C-227	Golden Cross Bantam	Comstock, Ferre & Co., Wethersfield, Conn. Wordell Seed Store, New Bedford.....	94	One off-type plant that was two-stalked, half as tall as the average, with narrow leaves and a late maturing tassel out of a total of 60 plants was called an "inbred."

Table 4. Laboratory Germination and Field Test Performance of Hybrid Sweet Corn, Amherst, Massachusetts. Continued

Lab No.	Variety	Wholesale Distributor, Dealer When Other than Wholesale Distributor, Place Collected	Laboratory Germination %	Field Performance
Eastern States Farmers' Exchange, W. Springfield, Mass.				
B-26 S	Golden Cross Bantam	Northampton State Hospital, Northampton No. V-621 R.	85	Two off-type plants out of a total of 84 were called "inbreds." One of these plants was dwarf, suckerless, with a short ear and tight tassel while the other plant was dwarf, suckerless, and spindly.
C-312	Golden Cross Bantam	Chas. C. Hart Seed Co., Wethersfield, Conn. Chase Grain Co., No. Westport	88	One "inbred" and three off-type plants called "inbreds" in a total of 70 plants. The "inbred" plant was tall with a purple tassel while the three off-type plants called "inbreds" were dwarf, suckerless, with a tight tassel and no ear development.
C-300	Golden Cross Bantam	D. Landreth Seed Co., Philadelphia, Penna. Smith-Mills Hardware Co., No. Dartmouth	94	Five off-type plants out of a total of 112 plants were called "inbreds." Four of these plants were suckerless, spindly, and late in maturing while the other plant was short with a tight stubby tassel.
C-316	Golden Cross Bantam	Ross Bros. Co., Worcester, Mass. Same	99	One "inbred" found in a total of 102 plants. The plant was 1½ feet shorter than the average with no sucker's no ear development, and with a tight tassel.
C-374	Golden Cross Bantam	Vaughan's Seed Store, New York, N. Y. Winthmore Grain Co., Concord No. 25318	88	One "inbred" found in a total of 52 plants. The plant was taller than the average, was spindly, suckerless, and very late in maturing.
C-398	Golden Cross Bantam	F. W. Woodruff & Sons, Inc., Milford, Conn. Osca's Hardware & Paint Co., Seekonk No. 50799	96	One off-type plant dwarf, very spindly, with a small tight and shortly branched tassel, late in maturing, out of a total of 52 plants was called an "inbred."

Table 4. Laboratory Germination and Field Test Performance of Hybrid Sweet Corn, Amherst, Massachusetts. Continued

Lab. No.	Variety	Wholesale Distributor, Dealer When Other than Wholesale Distributor, Place Collected	Laboratory Germination %	Field Performance
C-719	Emerald	Associated Seed Growers, Inc., Milford, Conn. Farmers Co. Cooperative Assoc., Topsfield No. 18524	98	One off-type plant suckless, tasseled with few branches, flag leaves up instead of down, late in maturing out of a total of 105 plants was called an "inbred."
B-29	Joelcier	Eastern States Farmers' Exchange, W. Springfield, Mass. Same A-474 C	97	Three off-type plants dwarf, spindly, late maturing out of a total of 116 plants were called "inbreds."
C-814	Joelcier	Ross Bros. Co., Worcester, Mass. Same	99	Four "inbreds" and two off-type plants called "inbreds" were found in a total of 102 plants. The four "inbreds" were dwarf, spindly, late in maturing, with one ear to a stalk while the two off-type plants called "inbreds" were spindly and very late in maturing.
C-384	Joelcier	F. W. Woodruff & Sons, Inc., Milford, Conn. Farm Bureau Assoc., Wallingford No. 36035 A-1	93	Five off-type plants out of a total of 96 plants were called "inbreds." One of these plants was late, spindly and with a stubby tassel. Two of these plants were dwarf, spindly and late, and the remaining two plants were very dwarf, with narrow curled leaves, and no ear development.
C-490	Northern Cross	Joseph Harris & Co., Rochester, N. Y. Magrath Farm, Concord No. 1784 F	98	One "inbred" found in a total of 107 plants. The plant was dwarf, weak, spindly, had narrow leaves, a small tassel and was late in maturing.
B-215	Northern Cross	McNiff Farm, Hadley No. 1796	91	No "inbreds" found in a total of 109 plants.

Table 1. Laboratory Germination and Field Test Performance of Hybrid Sweet Corn, Amherst, Massachusetts.—(Continued)

P-219	Sixty Pk.	F. H. Woodruff & Sons, Inc., Milford, Conn. McNitt Farm, Hadley	95	One off-type plant spindly, narrow leaves (see illustration) out of a total of 85 plants was called an "inbred."
P-214	Golden sample	Chas. C. Hart Seed Co., Wethersfield, Conn. Community Feed Store, East Longmeadow No. 490	95	One off-type plant dwarf, long tassel infrequently branched, with sucrose as long as main plant, out of a total of 12 plants was called an "inbred."
C-67	Alphs Gold	Michael Leonard Seed Co., Chicago, Ill. P. A. Robinland, Methuen No. 3857	95	One "inbred" and one off-type plant called an "inbred" was found out of a total of 102 plants. The "inbred" had a pure cob, tassel while the off-type plant called an "inbred" was only two feet tall with a split tassel and sat on the ground level.

STUDIES OF FLOWER SEEDS

Section 261 H

Conducted by the Seed Laboratory*

In 1958, the twenty-third year of field-testing by the Seed Laboratory, studies were made to determine the quality of flower seeds offered for sale to residents of Massachusetts through various local and mail order outlets. A total of 387 seed lots, representing 9 genera and various mixtures of annuals packeted by 28 wholesalers or distributors, were obtained from 97 retailers or grower sources by the State Seed Inspectors. All except the mixtures were subjected to germination tests in the Laboratory before field-testing.

Since only nine genera were included in the 1958 tests it was a relatively complete and thorough picture of the quality of seed in these genera. The genera selected for field study were *Ageratum*, *Calendula*, *Celosia*, *Centaurea cyanus*, *Iberis*, *Phlox*, *Portulaca*, *Tagetes* and *Zinnia*. In addition to these nine genera which were field tested, similar field plantings were made of the annual flower seed mixtures offered by most of our wholesale seedsmen.

All the flower seeds were planted on June 4th and 5th. Seeds were sown in 10-foot rows and the rows were spaced three feet apart. In all cases one packet of seed was planted per row. The results listed in Table 5 are for only those samples considered worthless for sale, or those with satisfactory germination tests but found unsatisfactory in the field for other reasons. A sample was considered worthless for sale if it germinated 50 percent or less of the tentative "standard" for flower seed. The tentative "standards" for the respective genera included in the field trials are as follows: *Ageratum*, 70%; *Calendula*, 70%; *Celosia*, 70%; *Centaurea cyanus*, 70%; *Iberis*, 70%; *Phlox*, 70%; *Portulaca*, 70%; *Tagetes*, 70%; and *Zinnia*, 70%. On the basis of the laboratory tests, 4 percent of the total of 373 lots were "worthless" and 28.9 percent were below the tentative "standards."

Table 5 lists those samples that were found in the field test to differ in performance from that stated on the seed packet plus those samples that germinated 50% or less than the tentative "standards" in the laboratory tests. Also included are observations made on the annual flower mixture packets.

*Waldo C. Lincoln, Jr., Research Instructor.
Kenneth Pelton, Laboratory Assistant.

Table 5

Field Test Performances of Flower Seed Lots Tested and Found Unsatisfactory in some Respects, Amherst, Mass., 1958

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected and Variety of Seed	Laboratory Germination %	Field Test Performance
George J. Ball Co., West Chicago, Ill.				
J. Shannon & Sons, Woburn				
C-152	Phlox	Globe Mixture.....	86	50% rose with a dark center.
Joseph Breck & Sons, Inc., Boston, Mass.				
C-95	Portulaca	All double Mixed.....	75	20% single.
C-91	Zinnia	New Centuray Mixed.....	75	85% rose pink.
W. Atlee Burpee Co., Philadelphia, Penna.				
Green Thumb Garden Shop, No. Plymouth				
A-99	Celosia	Plumosa, Mixed.....	77	75% deep red shade.
Crosman Seed Corp., Rochester, N. Y.				
S. S. Kresge Co., Newburyport				
A-246	Zinnia	Tiny Cupid Mixed.....	81	Poor color mixture; 60% orange & yellow.
F. W. Woolworth & Co., Hyannis				
C-255	Mixture	Surprise Flower Garden.....	..	29 genera found.
Deerington Zinnia Gardens, Maroa, Ill.				
F. W. Woolworth Co., Webster				
A-217	Zinnia	Deerington Special Double Bloom Giants.....	24	Only 3 colors.
A-218	Zinnia	Pride of the Nation, Crimson Red..	22	Too few plants for a performance test.
A-215	Zinnia	Special Royal Golden Orange.....	26	Satisfactory.**
De Jager & Sons, Inc., So. Hamilton, Mass.				
A-260	Calendula	Radio.....	33	Satisfactory.**
Ferry-Morse Seed Co., Detroit, Mich.				
Bellingham Hardware Co., Weymouth Landing				
A-148	Zinnia	New Century Mixed.....	72	95% luminosa type.
Haverhill Hardware Co., Haverhill				
A-249	Zinnia	Peppermint Stick.....	92	No striping at all.
Jordan-Marsh Co., Boston				
A-86	Phlox	Mixed.....	73	4 colors, but 60% were magenta.
J. J. Newbury & Co., Whitman				
A-164	Mixture	Wild Garden Mixture.....	..	17 genera found.
Fredonia Seed Co., Fredonia, N. Y.				
Curtis Farms, Inc., S. Weymouth				
A-166	Iberis	Mixed.....	63	90% light & dark lavender.
Scott Hardware Co., Lowell				
A-283	Mixture	Cut Flower Mixture.....	..	21 genera found.
Chas. C. Hart Seed Co., Wethersfield, Conn.				
First National Stores, Taunton				
A-291	Zinnia	Lilliput Purple.....	29	Satisfactory.*
First National Stores, Whitman				
A-161	Zinnia	Peppermint Stick.....	71	Only 40% with striping.
New Style Hardware Co., Roslindale				
A-12	Calendula	Orange King.....	23	Satisfactory.**
Pierce Hardware Co., Taunton				
A-41	Iberis	Dwarf Hybrids Mixed.....	63	Only 3 colors—70% light lavender. Too few plants for a performance test.

Table 5—Continued
Field Test Performances of Flower Seed Lots Tested and Found
Unsatisfactory in some Respects, Amherst, Mass., 1958

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected and Variety of Seed	Laboratory Germination	Field Test Performance
A-170	Mixture	Vanderhoof Hardware Co., Concord Annual Flower Garden Mix.....	..	15 genera found.
		Budd D. Hawkins Co., Wethersfield, Conn. Lamson's, Inc., Marlboro Orange King.....	25	Satisfactory.**
A-186	Calendula	Wild Flower Garden Mix.....	..	15 genera found.
C-365	Mixture	Mandeville & King Co., Rochester, N. Y. Fiske Corp., Natick Peppermint Stick.....	81	Only 5% with striping.
A-136	Zinnia	The Pet Shop, Fall River The Wonder Packet.....	..	17 genera found.
C-270	Mixture	L. Richmond & Co., Brockton Orange King.....	25	Satisfactory.**
A-5	Calendula	White Hardware Co., Framingham Polka Giant Peppermint Stick....	87	Only 45% with striping.
A-141	Zinnia	Northrup, King & Co., Minneapolis, Minn. Central Hardware Co., Fitchburgh Cherry Sunday.....	80	75% red type.
A-239	Zinnia	F. W. Woolworth & Co., Hyannis Old Fashioned Garden.....	..	24 genera found.
A-235	Mixture	F. W. Woolworth & Co., Natick Peppermint Stick.....	70	Only 50% with striping.
A-129	Zinnia	F. W. Woolworth & Co., Plymouth Tall Red Shades.....	61	2% orange; 2% plumosa type; 25% dwarf.
A-96	Celosia	The Page Seed Co., Greene, N. Y. Lynde Hardware Co., Gardner Fantasy.....	65	Package shows a mixture but not so labeled.
A-310	Zinnia	Pelletized Seed Co., New York, N. Y. F. W. Woolworth & Co., Attleboro Double Mix.....	28	Satisfactory.**
A-116	Calendula	F. W. Woolworth & Co., Worcester Lilliput Mix.....	91	50% magenta & lavender.
A-265	Zinnia	Jerome B. Rice Seed Co., Cambridge, N. Y. Boston Supply Co., Framingham Old Fashion Garden Mixture.....	..	12 genera found.
A-139	Mixture	Toabes Hardware Co., Marshfield Mixed.....	67	Mixture of 5 colors, but 50% were light lavender.
A-93	Iberis	J. B. Rice Seed Co., Shushan, N. Y. Village Hardware Co., Athol California Giants Mixed.....	77	90% crimson color and luminous type.
A-305	Zinnia	Ross Bros. Co., Worcester, Mass. Mixed colors.....	83	95% blue perfection.
C-336	Ageratum	Sears, Roebuck & Co., Chicago, Ill. Sears, Roebuck & Co., Cambridge Old Fashioned Garden Mixture....	..	13 genera found.
A-209	Mixture	Vaughan's Seed Store, New York, N. Y. Tom Irwin, Rowley Sensation Orange.....	30	4% yellow.
A-318	Calendula			

Table 5—Continued

Field Test Performances of Flower Seed Lots Tested and Found Unsatisfactory in some Respects, Amherst, Mass., 1958

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distribution, Place Collected and Variety of Seed	Laboratory Germination	Field Test Performance
A-182	Mixture	Wirthmore Stores, Concord Surprise Garden Mix.....	..	24 genera found.
A-268	Zinnia	S. D. Woodruff & Sons, Orange, Conn. Harding Supply Co., Worcester Dahlia Flowered.....	13	Satisfactory.**
A-29	Calendula	Woodruff's Triple "T" Seed Co. Cohasset Hardware Co., Cohasset Orange King.....	32	Satisfactory.**
A-267	Mixture	Harding Supply Co., Worcester Annual Flower Collection.....	..	24 genera found.
A-266	Zinnia	Fantasy Orange Lady.....	17	Satisfactory.**
A-309	Iberis	Western Auto Assoc., Athol Umbellata Mix.....	24	70% light lavender.
A-144	Zinnia	White Hardware Co., Framingham Improved Lilliput.....	78	90% magenta colored.

** "Satisfactory" indicates that color and type of the plants produced were in agreement with the label claims.

**Table 6. Summary, by Wholesalers, of the Performance
of Flower Seeds in the Field**

Seeds Packeted by	Total No. Samples Tested	*No. Samples Satisfactory	**No. Samples Unsatisfactory
Ball, George J. Co..... W. Chicago, Ill.	11	10	1
Benton Kirby Co..... Milwaukee, Wis.	2	2	0
Breck, Joseph & Sons, Inc..... Boston, Mass.	26	24	2
Burpee, W. Atlee Co..... Philadelphia, Penna.	28	27	1
Comstock, Ferre & Co..... Wethersfield, Conn.	7	7	0
Crosman Seed Corp..... Rochester, N. Y..	34	33	1
Deerington Zinnia Gardens..... Maroa, Ill. . .	4	1	3
De Jager & Sons..... So. Hamilton, Mass.	7	6	1
Ferry-Morse Seed Co..... Wethersfield, Conn.	31	28	
Fredonia Seed Co..... Fredonia, N. Y.	16	15	
Germain's, Inc..... Los Angeles, California	6	6	
Harris, Joseph Co..... Rochester, N. Y.	7	7	
Hart, Chas. C. Seed Co..... Wethersfield, Conn.	25	20	5
Hawkins, Budd D..... Wethersfield, Conn.	6	5	1
Hygrade Seed Co..... Fredonia, N. Y.	4	4	0
Irwin, Tom..... Rowley, Mass.	3	3	0
Mandeville & King Co..... Rochester, N. Y.	45	42	3
Mulford Hewitt..... Lebanon, Ohio	1	1	0
Northrup, King & Co..... Minneapolis, Minn.	30	27	3
The Page Seed Co..... Greene, N. Y.	12	11	1
Pelletized Seed Co..... New York, N. Y.	6	4	2
Rice, J. B. Jr. Co..... Shushan, N. Y.	8	7	1
Rice, Jerome B. Co..... Cambridge, N. Y.	16	15	1

*Samples that are found to agree with the label and whose germination is above the "worthless for sale" point.

**Samples found that do not agree with the label, or samples whose germination is considered "worthless for sale" or samples labeled mixtures that do not contain an adequate proportion of different types to be considered a good mixture.

Table 6—Continued

Summary, by Wholesalers, of the Performance of Flower Seeds in the Field

Seeds Packaged by	Total No. Samples Tested	*No. Samples Satisfactory	**No. Samples Unsatisfactory
Ross Bros. Co., Worcester, Mass.	6	5	1
Sears, Roebuck Co., Chicago, Ill. Chicago, Ill.	11	11	0
Vaughan's Seed Store New York, N. Y.	21	20	1
Woodruff, S. D. & Sons, Orange, Conn.	5	2	1
Woodruff's Triple "T" Seed Co., Wethersfield, Conn.	11	7	4
Totals,	387	350	37

*Samples that are found to agree with the label and whose germination is above the "worthless for sale" point.

**Samples found that do not agree with the label, or samples whose germination is considered "worthless for sale" or samples labeled mixtures that do not contain an adequate proportion of different types to be considered a good mixture.

Table 7. Summary, by Wholesalers, of the Total Number of Official Samples Tested in the Seed Laboratory

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Fredonia Seed Co., Fredonia, N. Y.....	9	9	0	.....	.....	.....	.....	.....	.....
Garden State Seed Co., Newark, N. J.....	.....	.....	.....	.....	.....	.....	2	2	0
Green Valley Mills, Inc., Nanuet, N. Y.....	.....	.....	.....	.....	.....	.....	1	1	0
Harris, Jose. & Co., Rochester, N. Y.....	19	19	0	.....	.....	.....	.....	.....	.....
Hart, Charles C. Seed Co., Wethersfield, Conn.....	51	48	3	2	1	1	1	0	1
Hawkins, Budd D., Wethersfield, Conn.....	7	7	0	.....	.....	.....	1	0	1
Home & Garden Products Co., Philadelphia, Penna.....	.....	.....	.....	.....	.....	.....	1	0	1
Hubbard-Hall Co., Waterbury, Conn.....	.....	.....	.....	.....	.....	.....	3	2	1
Hygrade Seed Co., Fredonia, N. Y.....	6	6	0	.....	.....	.....	.....	.....	.....
Independence Hall Seed Co., Baltimore, Md.....	.....	.....	.....	1	1	0	4	2	2
Lancaster Seed Co., Paradise, Penna.....	3	3	0	.....	.....	.....	.....	.....	.....
Landreth Seed Co., Philadelphia, Penna.....	21	20	1	.....	.....	.....	1	1	0
Lawn Products Co., Philadelphia, Penna.....	.....	.....	.....	.....	.....	.....	1	0	1
Lee Patten Seed Co., Arlington, Mass.....	.....	.....	.....	6	5	1	2	1	1
Loft Pedigreed Seed Co., Pawtucket, R. I.....	.....	.....	.....	.....	.....	.....	1	1	0
Lyon, John D., Inc., Cambridge, Mass.....	.....	.....	.....	.....	.....	.....	1	1	0
Metropolitan Seed Co., Jersey City, N. J.....	.....	.....	.....	.....	.....	.....	1	0	1
Michael Leonard Seed Co., Davenport, Iowa.....	3	3	0	.....	.....	.....	.....	.....	.....
Mock Seed Co., Philadelphia, Penna.....	.....	.....	.....	2	2	0	.....	.....	.....
Mulford Hewett Seed Co., Lebanon, Ohio.....	1	1	0	.....	.....	.....	.....	.....	.....
New England Seed Co., E. Providence, R. I.....	.....	.....	.....	.....	.....	.....	2	2	0
Northern Seed Co., Providence, R. I.....	.....	.....	.....	.....	.....	.....	4	0	4
Northrup, King & Co., Minneapolis, Minn.....	15	15	0	.....	.....	.....	.....	.....	.....

Table 7. Summary, by Wholesalers, of the Total Number of Official Samples Tested in the Seed Laboratory

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Ostberg Seed Co., Chicago, Ill.....	.....	.....	.....	.....	.....	.....	1	1	0
Page Seed Co., Greene, N. Y.....	19	19	0	4	4	0	1	0	1
Pedigreed Seed Co., Jersey City, N. J.....	.....	.....	.....	4	2	2	1	0	1
Philadelphia Seed Co., Philadelphia, Penna.....	.....	.....	.....	20	20	0	2	2	0
Randolph Seed Co., Randolph, N. Y.....	5	4	1	.....	.....	.....	.....	.....	.....
Rice, Jerome B. Jr., Shushan, N. Y.....	5	5	0	.....	.....	.....	.....	.....	.....
Rice, Jerome B. Seed Co., Cambridge, N. Y.....	2	2	0	.....	.....	.....	.....	.....	.....
Robson Quality Seeds, Inc., Hall, N. Y.....	1	1	0	.....	.....	.....	.....	.....	.....
Ross Bros. Co., Worcester, Mass.....	18	17	1	.....	.....	.....	.....	.....	.....
Rowe, Chas. H., Philadelphia, Penna.....	1	1	0	.....	.....	.....	.....	.....	.....
Scarlett, Wm. G. & Sons, Baltimore, Md.....	.....	.....	.....	43	40	3	3	2	1
Seaboard Seed Co., Philadelphia, Penna.....	.....	.....	.....	1	1	0	3	2	1
Scott, O., & Son Marysville, Ohio.....	.....	.....	.....	.....	.....	.....	1	0	1
Stanford Seed Co., Baltimore, Md.....	.....	.....	.....	34	32	2	1	0	1
Teweles L. Seed Co., Milwaukee, Wis.....	.....	.....	.....	.....	.....	.....	4	3	1
Tri-State Seed Co., Philadelphia, Penna.....	4	4	0	.....	.....	.....	.....	.....	.....
Turf Research, Inc. Sioux City, Iowa.....	.....	.....	.....	1	1	0	.....	.....	.....
Vaughan's Seed Store, New York, N. Y.....	17	17	0	2	2	0	3	2	1
Whitney Seed Co., Buffalo, N. Y.....	.....	.....	.....	48	45	3	4	4	0
Woodruff, F. H. & Sons, Milford, Conn.....	33	33	0	.....	.....	.....	1	0	1
Woodruff, F. D. & Sons, Orange, Conn.....	4	4	0	.....	.....	.....	1	1	0
Woodruff's Triple "T" Seed Co. Wethersfield, Conn.....	14	12	2	.....	.....	.....	.....	.....	.....
Woodworth-Bradley Co., Inc., Providence, R. I.....	.....	.....	.....	.....	.....	.....	2	0	2
Totals.....	491	479	12	297	262	35	88	38	50

Massachusetts Vegetable Seed Standards

The amended seed law requires in Section 261 I that the Director of the Massachusetts Agricultural Experiment Station shall, after reasonable notice and hearing and with the approval of the Commissioner of Agriculture, adopt vegetable seed germination standards, prescribe rules and regulations, and in like manner modify or amend rules and regulations governing the methods of sampling, inspecting, analyzing, testing, and examining agricultural, vegetable and flower seeds and the tolerances to be followed in administration.

A hearing for the above stated purpose was held in Horticultural Hall, Worcester, Massachusetts, at 3 P. M., October 18, 1946. The following set of standards was so approved and adopted:

KIND OF SEED	GERMINATION STANDARD %	KIND OF SEED	GERMINATION STANDARD %
Artichoke (<i>Cynara Scolymus</i>)....	60	Kale.....	75
Asparagus.....	70*	Kohlrabi.....	75
Bean, Lima.....	70	Leek.....	60
Bean, Scarlet Runner.....	75	Lettuce.....	80
Bean, Other Varieties.....	75	Muskmelon.....	75
Beet.....	65	Mustard.....	75
Broccoli.....	75	Okra.....	50*
Brussels Sprouts.....	70	Onion.....	70
Cabbage.....	75	Parsley.....	60
Cabbage, Chinese.....	75	Parsnip.....	60
Carrot.....	55	Peas.....	80
Cauliflower.....	75	Pepper.....	55
Celeriac.....	55	Pumpkin.....	75
Celery.....	55	Radish.....	75
Chard, Swiss.....	65	Rhubarb.....	60
Chicory.....	65	Rutabaga.....	75
Citron.....	65	Salsify.....	75
Collard.....	80	Sorrel.....	60
Corn, Sweet.....	75	Soybean.....	75
Cress, Garden or Curled.....	40	Spinach, Common.....	60
Cress, Water.....	35	Spinach, New Zealand.....	40
Cucumber.....	80	Squash.....	75
Dandelion.....	45	Tomato.....	75
Egg Plant.....	60	Tomato, Husk.....	50
Endive.....	70	Turnip.....	80
Fetticus (Corn Salad).....	70	Watermelon.....	70

*Including Hard Seeds. However, the percentage of germination, exclusive of hard seeds and the percentage of hard seed, if present, must be stated

LABORATORY REGULATIONS AND FEES FOR TESTING SEED

The following regulations and fees have been approved by the Director of the Massachusetts Agricultural Experiment Station.

FIELD CROPS:	KIND OF SEED	PURITY ONLY	GERMINATION ONLY	PURITY AND GERMINATION
Alfalfa, Rape, Ryegrasses, Soybeans, Timothy.....		\$1.00	\$0.50	\$1.25
Cereals, Buckwheat, Sudan Grass, Vetches.....		1.25	.50	1.50
Clovers, Fescues, Reed Canary Grass.....		1.00	.50	1.50
Brome Grass, Millets.....		1.50	.50	2.00
Bentgrasses, Bluegrasses, Orchard Grass, Redtop....		2.00	.50	2.25
Redtop (Unhulled).....		2.50	.50	2.75

Mixtures: Lawn, Pasture, Mowing, etc.

Purity only.....\$2.50

Germination only..... .50 for each component

Purity and Germination..... 2.50 + .50 for each component

Special Mixtures: Consisting of two kinds of cereals, two kinds of clover only, or Timothy and one kind of clover

Purity only..... \$1.25

Germination only..... .50 for each component

Purity and Germination..... 2.00

Vegetables: Germination tests for all kinds of vegetable seeds, 30 cents each.

Cleaning Tobacco Seed: For each lot of one pound or less, based on the weight of seed as received for cleaning, 50 cents.

Kinds of Seed Not Listed: Fees for testing and for other seed determinations not listed will be based on the time consumed in making the test or for other service requested.

Free Tests: During any one calendar year, the Seed Testing Laboratory will allow two free tests of vegetable or tobacco seed to any person residing or doing business in the Commonwealth.

The minimum weights of samples to be submitted for analysis are:

- Two ounces of grass seed, white or alsike clover, or seeds not larger than these.
- Five ounces of red or crimson clover, alfalfa, ryegrasses, millet, rape, or seeds of similar size.
- One pound of cereal, vetches, or seeds of similar or larger size.

The minimum number of seeds of any kind to be submitted for a germination test is 400.

Samples should be taken so as to represent correctly the lot sampled, each placed in a strong container, the parcel of samples securely wrapped and addressed to Seed Laboratory, Agricultural Experiment Station, Amherst, Mass.

Checks or Money Orders must be made payable to the University of Massachusetts and sent to the Treasurer's Office.

In no case will the final report for work done be rendered until all fees are paid.

Thirty-ninth Annual Report of Pullorum Disease Eradication in Massachusetts



During the 1958-59 testing season, a total of 266 chicken, turkey, and pheasant flocks was tested. Among 975,312 samples tested 0.0001 percent was positive, which is a slight decrease over the percentage (0.0009) positive in the previous season. Among all the birds tested only one reactor was detected in a small fancier's flock. At the close of the season all flocks were classified as negative. This is the first year that no infection was detected among the so-called commercial breeding flocks.

**THIRTY-NINTH ANNUAL REPORT OF PULLORUM
DISEASE ERADICATION IN MASSACHUSETTS
1958-59**

**H. Van Roekel, Miriam K. Clarke,
C. F. Smyser, and G. H. Snoeyenbos
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INTRODUCTION

In the 1958-59 testing season 266 flocks were tested, which is considerably less than the number (321) tested in 1957-58. The number of samples tested was also less than in 1957-58; however, this decrease was not as marked as it was for the flocks. It is apparent that changes which have occurred within the industry in the past few years have reduced the testing work. It is encouraging, however, that the percentage (0.0001) of positive tests was the lowest attained in testing history. Only one flock was found infected which revealed one infected bird. At the close of the season all tested breeding flocks were classified as negative. Of the total birds tested 97.10 percent were found in 100 percent tested nonreacting flocks.

The laboratory appreciates the fine cooperation it has received from the Massachusetts poultry industry in striving to eradicate pullorum disease from its flocks. It is hoped that the poultrymen will continue their vigilance in keeping this disease out of their flocks.

We also wish to express our appreciation for the continuous cooperation received from the Cooperative Extension Service at the University of Massachusetts, Massachusetts Department of Agriculture and other agencies.

SUMMARY OF SERVICE RENDERED

Flocks tested.....	266
Chicken.....	218
Turkey.....	24
Pheasant.....	24
Number of tests.....	975,312
Chickens:	
Routine.....	944,601
Experimental.....	2,989
Fowl other than chickens:	
Routine.....	27,714
Experimental.....	8
Owners receiving necropsy service.....	32
Necropsies of reacting birds.....	56

Table 1. Distribution of Tests and Reactors by Counties and by Breeds

Breeds	Barnstable	Berkshire	Bristol	Essex	Franklin	Hampden	Hampshire	Middlesex	Norfolk	Plymouth	Worcester	Totals	Percent Positive
Rhode Island Reds													
Total tests.....	256	18,552	12,447	8,497	6,069	910	8,534	32,505	4,237	27,768	119,775	0.00	
Positive tests.....	0	0	0	0	0	0	0	0	0	0	0	0	
New Hampshires													
Total tests.....		4,876	1,685		221						6,782	0.00	
Positive tests.....		0	0		0						0	0	
Barred Plymouth Rocks													
Total tests.....	4,290	30,695	10,482	4,337	1,479	1,669	41,223	21,365	19,783	37,861	173,184	0.00	
Positive tests.....	0	0	0	0	0	0	0	0	0	0	0	0	
White Plymouth Rocks													
Total tests.....	21,563	34,150	86,191	23,387	8,815	40,373	39,331	21,581	78,800	26,638	380,829	0.00	
Positive tests.....	0	0	0	0	0	0	0	0	0	0	0	0	
White Leghorns													
Total tests.....		124		1,535	295	8,099	1,287	19,143	3,019	2,195	68,745	0.00	
Positive tests.....		0		0	0	0	0	0	0	0	0	0	
Miscellaneous													
Total tests.....	2,674	76	10,504	41,003	1,535	792	8,739	44,478	9,113	40,572	38,789	198,275	0.0005
Positive tests.....	0	0	0	0	0	0	0	0	0	0	1	1	0
Total Tests.....	24,237	37,670	98,901	151,808	39,291	17,671	59,790	134,853	103,707	146,411	133,251	947,590	
Positive tests	0	0	0	0	0	0	0	0	0	0	1	1	
Number.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0008	0.0001	
Percent													

DISTRIBUTION OF TESTS AND REACTORS

A total of 917,590 chicken samples from 11 counties was tested and the percentage of positive tests was 0.0001 (table 1). The single reactor, a Brown Leghorn hen, was found in a small fancier's flock in Worcester County. Essex, Plymouth, Middlesex, and Worcester Counties led in the number of samples tested.

The following breeds were tested: Australorp, Bantam, Barred Plymouth Rock, Columbian, Cornish, Crosses, Delaware, New Hampshire, Rhode Island Red, White American, White Leghorn, White Plymouth Rock, White Wyandotte.

The White Plymouth Rock, Barred Plymouth Rock, Rhode Island Red, White Leghorn, and New Hampshire were the predominating breeds tested. Of the total samples tested 40.19 percent were taken from White Plymouth Rock, 18.28 percent from Barred Plymouth Rock, 12.64 percent from Rhode Island Red, 7.25 percent from the White Leghorn, and the remainder from other breeds.

Of the 860,873 samples collected from females 33,580 were from hens, and 827,293 from pullets, with 0.00 and 0.0001 percent reactors, respectively. Among the 86,717 samples collected from males none were positive.

ANNUAL TESTING OF FLOCKS

Table 2 lists the results from flocks tested (1) for the first time, (2) intermittently, (3) for two consecutive years, and (4) for three or more consecutive years.

In the group tested for the first time, 22 flocks were tested which revealed the single infected bird. The infected flock represented a small group of fancier's birds. The infection in this flock was first identified among birds exhibited at the Boston Poultry Show. A later complete test of the flock revealed no additional infected birds. The average number of birds per flock in this group was 723.

No reactors were detected among the flocks in the intermittent, two-year, and three-year tested groups. The average number of birds per flock in the respective groups was as follows: intermittent—2,162; two-year group—3,686; three-year group—4,970.

For all four groups 218 flocks were tested, representing 944,955 birds and 947,590 samples, of which 0.0001 percent were positive. The 208 flocks that were

Table 2. Annual Testing Versus Single and Intermittent Testing

Classification	Flocks	Birds	Total Tests	Positive Tests		Negative Flocks		Posi Flocks	
				Number	Percent	100-Percent Tested	Partially Tested	100-Percent Tested	Partially Tested
Tested for the first time.....	22	15,909	16,388	1	0.006	21	1	—	—
Intermittent testing.....	6	12,971	12,971	0	0.00	5	1	—	—
Two consecutive years.....	22	81,101	81,101	0	0.00	21	1	—	—
Three or more consecutive years.	168	834,974	837,130	0	0.00	161	7	—	—
TOTALS.....	218	944,955	947,590	1	0.0001	208	10	—	—

100 percent tested and nonreacting contained 917,521 or 97.10 percent of the total birds tested. All tested breeding flocks were classified as negative at the termination of the season.

During the past year 79, or 29.37 percent, of the flocks tested in 1957-58 were not tested. Annual testing of breeding flocks is required by the National Poultry Improvement Plan and by the Massachusetts Department of Agriculture. If a flock owner finds it necessary to discontinue the production of hatching eggs for his own replacements, he should make certain that stock is obtained from an officially clean source for his replacement flock.

APPEARANCE OF INFECTION IN FLOCKS PREVIOUSLY NEGATIVE

Fortunately, no infection was detected in tested flocks that had been negative the previous season. Table 3 lists the incidence of "breaks" among Massachusetts tested flocks during the past 18 years. Flock owners and hatcherymen should observe constantly the strictest vigilance against the introduction and spread of the disease.

Table 3. Incidence of "Breaks" Observed During the Past Eighteen Years

Year	Number of Flocks	Breaks		Flocks with Less than 0.5 Percent Infection on First Test	
		Number	Percent	Number	Percent
1942	255	6	2.35	3	50.00
1943	286	13	4.54	8	61.54
1944	289	17	5.88	13	76.47
1945	340	21	6.18	17	80.95
1946	388	20	5.15	14	70.00
1947	430	17	3.95	9	52.94
1948	425	16	3.76	13	81.25
1949	386	6	1.55	3	50.00
1950	383	18	4.70	16	88.88
1951	381	6	1.57	6	100.00
1952	360	8	2.22	5	62.50
1953	316	7	2.22	4	57.14
1954	291	2	0.69	2	100.00
1955	275	5	1.82	2	40.00
1956	254	0	0.00	0	0.00
1957	233	1	0.43	0	0.00
1958	208	1	0.48	1	100.00
1959	218	0	0.00	0	0.00

The following measures have been effective in establishing and maintaining a pullorum-free flock.

1. All the birds on the premises should be tested each year.
2. If infection is present, the entire flock should be retested within four to six weeks until a negative report is obtained, provided the value of the birds justifies the expenditure.

3. Every reactor, regardless of its value, should be removed from the premises and sold for slaughter immediately upon receipt of the report.

4. Offal from all birds dressed for market or home consumption as well as dead birds not fit for consumption should be burned.

5. The poultry houses, runs, and equipment should be thoroughly cleaned and disinfected immediately after removal of reactors. An empty pen to each house should be provided to facilitate cleaning and disinfection during the winter months. Disinfectants approved by the United States Department of Agriculture should be used.

6. Birds removed from the premises to egg-laying contests, exhibitions, etc., should be held in quarantine and determined free of disease before they are readmitted into the flock.

7. Purchase of stock in the form of adults, chicks, and eggs should be from known pullorum disease-free flocks. The Massachusetts Department of Agriculture, 41 Tremont Street, Boston, should be consulted regarding additions or replacements in the flock.

8. Eggs should not be saved for hatching until after a flock has been tested and all the infected birds removed. Early pullet testing will permit early hatching.

9. Fresh and infertile eggs from unknown or infected sources should not be fed to chickens or exposed to birds or animals, such as crows, sparrows, and skunks, that may carry or spread the infection.

10. Poultrymen should not custom-hatch for untested or infected flocks (including fowl other than chickens).

11. Owners of pullorum disease-free flocks should not permit hatching where infected eggs or stock may be found.

12. Poultrymen should not buy feed in bags that have been used or exposed to infection. (Such bags if properly disinfected will be safe for further use.)

13. Poultrymen should regard fowl other than chickens as a possible source of pullorum infection unless tested and found free from pullorum disease.

14. Poultrymen should not use equipment that has been exposed to or contaminated with infective material unless it is properly cleaned and sterilized or disinfected.

TESTING OF FOWL OTHER THAN CHICKENS

During the past year, 27,722 samples from fowl other than chickens, including 18,014 turkeys, 8,662 pheasants, 739 quail, 232 partridge, 31 geese, 16 ducks, 15 pea fowl, 11 guinea fowl, one hawk, and one owl were tested. No reactors were detected.

NONREACTING FLOCKS CLASSIFIED BY COUNTIES

This is the second consecutive year in the entire testing history that all tested flocks have been classified as nonreacting. A total of 218 nonreacting flocks, representing 944,955 birds, was identified in 11 counties as listed in Table 4. A total

Table 4. Nonreacting Flocks Classified by Counties

County	100% Tested		Partially Tested		Totals	
	Flocks	Birds	Flocks	Birds	Flocks	Birds
Barnstable.....	1	24,237	—	—	1	24,237
Berkshire.....	7	33,777	2	3,893	9	37,670
Bristol.....	21	94,177	2	4,251	23	98,428
Essex.....	26	135,999	2	15,754	28	151,753
Franklin.....	14	39,291	—	—	14	39,291
Hampden.....	8	16,945	1	726	9	17,671
Hampshire.....	17	59,782	1	8	18	59,790
Middlesex.....	29	134,437	1	416	30	134,853
Norfolk.....	21	103,068	—	—	21	103,068
Plymouth.....	37	143,553	1	2,386	38	145,939
Worcester.....	27	132,255	—	—	27	132,255
Totals.....	208	917,521	10	27,434	218	944,955

of 208 flocks was 100 percent tested; whereas, 10 flocks were partially tested. The latter group constituted 27,434 birds in seven counties. However, it is encouraging that 97.10 percent of all birds tested are in 100 percent nonreacting flocks, and it is hoped that in the near future all flocks will be 100 percent tested.

It was stated in previous sections that among all flocks tested only one reactor was detected and it was identified in a small back-yard flock. The laboratory appreciates the splendid cooperation received from the flock owners in the attempts to eradicate the disease. It is hoped that flock owners will continue to cooperate to the fullest extent in order that the disease may be eradicated from the Massachusetts poultry industry.

COMPARISON OF THE 1957-58 AND 1958-59 TESTING

Table 5 lists testing data for the two seasons. For the second consecutive year fewer flocks, birds, and samples were tested than in the previous year. Only three counties (Barnstable, Franklin, and Hampshire) revealed a slight increase; whereas, the remaining eight counties had appreciable decreases. Middlesex, Plymouth, and Worcester Counties revealed a decline of more than ten thousand birds. While the results for the two years differ only slightly it is apparent that continued progress is evident.

Table 5. Comparison of 1957-58 and 1958-59 Testing

County	Flocks	Birds	Tests	Positive Tests Percent	Nonreacting Flocks
1957-58 Season					
Barnstable	9	22,094	22,094	0.00	9
Berkshire	11	40,492	40,492	0.00	11
Bristol	33	104,931	104,931	0.00	33
Essex	33	159,775	159,775	0.00	33
Franklin	16	33,587	33,587	0.00	16
Hampden	10	22,384	22,384	0.00	10
Hampshire	21	58,353	58,353	0.00	21
Middlesex	39	157,643	157,643	0.00	39
Norfolk	23	111,565	112,913	0.00	23
Plymouth	47	161,133	161,133	0.00	47
Worcester	27	136,793	143,808	0.006	27
Totals	269	1,008,750	1,017,113	0.0009	269
1958-1959 Season					
Barnstable	1	24,237	24,237	0.00	1
Berkshire	9	37,670	37,670	0.00	9
Bristol	23	98,428	98,901	0.00	23
Essex	28	151,753	151,808	0.00	28
Franklin	14	39,291	39,291	0.00	14
Hampden	9	17,671	17,671	0.00	9
Hampshire	18	59,790	59,790	0.00	18
Middlesex	30	134,853	134,853	0.00	30
Norfolk	21	103,068	103,707	0.00	21
Plymouth	38	145,939	146,411	0.00	38
Worcester	27	132,255	133,251	0.0008	27
Totals	218	944,955	947,590	0.0001	218

THIRTY-NINE-YEAR PULLORUM DISEASE TESTING SUMMARY

The thirty-nine-year testing summary listed in table 6 reveals that the 1958-59 season has the lowest percentage of positive tests and 100 percent of all birds tested are in nonreacting flocks. It is hoped that the ultimate goal of "no reactors found" may soon be attained and maintained.

Table 6. Thirty-Nine-Year Pullorum Disease Testing Summary

Season	Flocks	Birds	Total Tests	Positive Tests Percent	Non- reacting Flocks	Birds in Non- reacting Flocks	
						Number	Percent
1920-21.....	108	24,718	24,718	12.50	25	2,414	9.77
1921-22.....	110	29,875	29,875	12.65	27	4,032	13.50
1922-23.....	121	33,602	33,602	7.60	29	5,400	16.07
1923-24.....	139	59,635	59,635	6.53	38	11,082	18.58
1924-25.....	156	66,503	66,503	2.94	79	25,390	38.18
1925-26.....	201	67,919	67,919	2.31	124	33,615	49.49
1926-27.....	249	127,327	127,327	4.03	114	40,269	31.63
1927-28.....	321	190,658	232,091	5.35	138	80,829	42.39
1928-29.....	413	254,512	304,092	3.56	228	153,334	60.25
1929-30.....	460	331,314	386,098	2.17	309	203,038	66.97
1930-31.....	447	356,810	402,983	1.47	328	267,229	74.89
1931-32.....	455	377,191	420,861	0.90	355	298,534	79.15
1932-33.....	335	296,093	300,714	0.47	276	238,074	80.41
1933-34.....	262	263,241	284,848	0.53	229	212,782	80.83
1934-35.....	244	281,124	301,887	0.39	213	251,778	89.56
1935-36.....	252	329,659	344,081	0.30	230	315,215	95.95
1936-37.....	307	448,519	561,762	0.37	281	424,431	94.63
1937-38.....	308	480,227	497,769	0.17	286	457,466	95.26
1938-39.....	355	571,065	615,205	0.34	327	469,134	82.10
1939-40.....	346	573,000	673,222	0.51	332	497,356	86.80
1940-41.....	309	527,328	538,589	0.09	299	492,475	93.39
1941-42.....	366	653,080	662,715	0.27	350	591,628	90.59
1942-43.....	332	637,666	649,137	0.48	317	600,607	94.19
1943-44.....	413	762,066	791,596	0.11	386	721,229	94.64
1944-45.....	458	836,481	943,987	0.12	431	792,551	94.75
1945-46.....	538	1,125,737	1,225,594	0.12	513	1,085,726	96.45
1946-47.....	562	1,156,147	1,238,983	0.13	534	1,112,043	96.19
1947-48.....	494	1,219,957	1,272,547	0.10	476	1,185,852	97.20
1948-49.....	458	1,179,481	1,213,073	0.04	452	1,171,363	99.31
1949-50.....	475	1,360,865	1,444,364	0.06	465	1,344,860	98.82
1950-51.....	448	1,358,540	1,394,192	0.05	442	1,339,068	98.57
1951-52.....	417	1,343,955	1,370,430	0.016	412	1,324,195	98.53
1952-53.....	371	1,155,359	1,168,739	0.04	366	1,146,932	99.27
1953-54.....	338	1,178,090	1,195,159	0.004	335	1,170,936	99.39
1954-55.....	311	1,101,543	1,169,822	0.13	306	1,085,449	98.54
1955-56.....	285	1,077,449	1,144,365	0.08	283	1,071,031	99.40
1956-57.....	272	1,093,056	1,144,832	0.01	271	1,091,667	99.87
1957-58.....	269	1,008,750	1,017,113	0.0009	269	1,008,750	100.00
1958-59.....	218	944,955	947,590	0.0001	218	944,955	100.00

ERADICATION OF PULLORUM DISEASE IN NONBREEDING FLOCKS

During the past year eradication measures were directed to all flocks in which pullorum disease was identified. Four egg-producing flocks experienced an acute outbreak of pullorum disease that resulted in serious losses to the owners. In one

instance, Flock 1, the birds were maintained on two farms several miles apart and a highly acute form of the disease occurred on one farm. Control measures were ineffective in checking the spread of the disease, which prompted the owner to dispose of the flock. The birds on the other farm were tested and revealed three reactors. *Salmonella pullorum* was isolated from one bird. A retest of the entire flock on this farm revealed no additional infected birds.

Flock 2 represented replacements on a farm that had experienced a serious outbreak of pullorum disease among mature laying birds. These laying birds were sold after several tests and before the replacement stock reached sexual maturity. No reactors were detected among the replacement stock when tested for the disease.

Flock 3 also had birds on two separate farms. On one farm acute pullorum disease appeared in one building which resulted in serious losses. Medication, testing, and partial depopulation were resorted to as measures for the elimination of the disease from the premises.

In all three outbreaks the disease was very costly to the flock owner and the laboratory. A total of 27,415 samples was tested from the three flocks.

Flock 4, an egg-laying flock, revealed an acute outbreak of pullorum disease among pullets that had become sexually mature. This outbreak is being controlled by depopulation of the farm.

Also, 1,011 chickens were tested at the Boston Poultry Show in January, 1959. Among birds exhibited by Massachusetts exhibitors, infection was detected in only one entry. This case has been discussed in previous sections.

No cases of pullorum infection were detected among chicks during the testing year which is most encouraging.

The five cases of pullorum disease, one among a small breeding flock and four acute outbreaks among laying flocks, reveal that pullorum disease is still present in Massachusetts and may cause serious losses not only in breeding flocks but also in nonbreeding flocks. The number of pullorum diseased flocks is gradually declining, and it is hoped that in the near future no cases will be detected.

It should be noted that fowl typhoid was not identified in either tested breeding flocks or among cases submitted for routine diagnosis during the testing year.

The cooperation received from the flock owners has been most gratifying in our efforts to eliminate the known foci of infection. Also, appreciation should be extended to the County Extension Service and the Massachusetts Department of Agriculture for the valuable assistance given in the eradication of these flock infections. Credit should also be given to the diagnostic laboratories at Waltham and Amherst for identifying these outbreaks.

OTHER SALMONELLA INFECTIONS

In September, 1958, one breeding flock tested with pullorum antigen revealed three doubtful reactors. The agglutination reaction obtained with serum from one of the reactors appeared very suspicious of infection. When this bird was examined at the laboratory, *Salmonella enteritidis* was recovered. Since so few reactors were detected, it was interpreted that this infection might not be of significance. However in March, 1959, the breeder-hatcher encountered an acute outbreak of salmonellosis in two chick flocks that proved to be caused by *S. enteritidis*. The breeder-hatcher was advised to retest that portion of the flock that had earlier revealed *S. enteritidis* infection. A total of 940 hens was retested and 4.68 percent reactors were detected. Four reactors were submitted to the laboratory and *S.*

enteritidis was recovered from three. The flock owner was advised to dispose of the old hens that revealed the infection. The replacement pullets will be tested with appropriate antigens when they are tested for pullorum disease this coming season.

Another hatcheryman requested that one of his supply flocks be tested for *Salmonella typhimurium* infection, since the disease had been identified in some of his stock. One flock of 1,436 birds was tested which revealed three doubtful reactors, but on bacteriological examination proved to be negative.

During this past year a serious *S. typhimurium* epidemic occurred in a state hospital. The source of infection was attributed to egg nog which was given as a dietary supplement to certain patients. The egg nog was prepared from eggs supplied by the poultry flock on the state hospital farm. At the request of the Massachusetts Department of Public Health the flock was tested with *S. typhimurium* and *S. pullorum* antigens. A total of 5,050 chickens was tested and revealed 94 reacting birds, the majority of them giving a weak reaction. Nine reactors were examined at the laboratory and *S. typhimurium* was isolated from two birds. The isolates from the human and chicken sources were typed by Dr. P. R. Edwards, Communicable Disease Center, Chamblee, Georgia, and Dr. E. S. Anderson, Central Public Health Laboratory, Colindale Avenue, London, and were found to be identical. The avian infection was incriminated as the source of the disease in the human patients.

Further testing in the flock has been conducted and the results will be reported elsewhere. The above case reaffirms very strongly that certain members of the *Salmonella* group may be responsible for human outbreaks of this disease. It should be re-emphasized that *S. typhimurium* is by far the most predominant *Salmonella* type found in chickens, turkeys, and also in human cases in Massachusetts, and that there may be a relationship between the infections in these three hosts. *Salmonellosis* in chickens and turkeys should be considered of potential public health significance as well as a serious problem in the avian species. Cases of the disease identified in poultry should be handled to prevent further dissemination of the infection to either human beings or birds.

Additional *S. typhimurium* testing was conducted in two other state hospital poultry flocks where there had been epidemics of salmonellosis in the patients in recent years. In one, 3,612 chickens were tested which revealed 11 doubtful reactors. Three of the strongest-reacting birds were necropsied and found negative for *S. typhimurium*. In the other flock, 2,295 chickens were tested with no reactors.

COMMENTS AND SUGGESTIONS

Filing Applications for Testing: We wish to repeat what has been emphasized in previous years: that flock owners are neglecting to return their application cards, which creates a great hardship on the laboratory and prevents efficient routing of flocks for testing. At the beginning of each season, flock owners who received testing service the previous season are sent application cards for the next year's work. Applications are processed in the order received from the owners. Also in order that the laboratory may determine personnel needs throughout the season, it is obvious that we need to know what the testing demands will be throughout the season. We hope that all flock owners will make a serious effort to submit their applications early. When the flock is ready for testing, the flock owner should submit sufficient deposit at least two weeks in advance of the testing date. Furthermore, all breeding flocks should be tested as soon as the birds are five months of age, provided the laboratory is in a position to do so.

Increased Efforts Toward Pullorum Disease Eradication: The testing results of tested flocks and the pullorum diagnoses in the diagnostic laboratories continue to show progress in the reduction and eradication of pullorum disease. Every effort should be made to follow through on every known case of pullorum disease and to institute measures that will prevent the further dissemination of the infection and to hasten its complete elimination. The following recommendations, approved by the Massachusetts Federation of Poultry Associations, may serve as a basis for a general eradication program.

I. Handling of flocks with acute outbreaks:

A. Affected chicks should be destroyed or reared for broilers. If early liquidation is not possible, then infection should be eliminated through short interval retesting.

B. In adult flocks special precautionary measures should be instituted to prevent the disease from spreading within the flock or to other flocks.

1. Flocks in the acute stage of the disease should not be sold.
2. Affected pens should be isolated if possible.
3. Medication should be given under the supervision of competent persons.
4. After the disease has subsided the flock should either be sold or tested at short intervals.

C. The use of drugs in an acute outbreak should be exercised only upon recommendation by competent persons.

II. Handling of infected tested breeding flocks:

A. Flock owners desiring official recognition are compelled to eradicate the disease from their flocks.

B. Infected breeding flocks whose owners do not wish to receive official recognition should be subjected to a planned eradication program.

III. Specific sanitary and control measures:

A. Upon identification of infection, effective plans should be applied regarding movement and sale of stock.

1. Infected semi-mature and mature flocks should be slaughtered when sold.
2. Reactors should be removed and sold for slaughter as soon as possible.
3. Immediately upon detection of infection in breeder and commercial hatcheries, effective plans should be instituted to prevent the further spread of the disease.

B. Sanitary conditions consistent with a sound eradication program should be maintained on all contaminated premises.

C. Only flocks that meet the qualifications of the pullorum-passed and pullorum-clean grades should be permitted to produce hatching eggs.

- D. The purchase of pullorum-clean stock should be more widely advocated.
- E. All birds entered in shows and contests should be free of pullorum disease as determined by the agglutination test.
- F. Regulatory aid should be requested for flock owners refusing to cooperate on a voluntary basis.
- G. The testing of infected flocks should be done on a free basis by an official state agent.
- H. An extensive educational program should be a vital part of the eradication campaign.

Massachusetts Law Requires Only Pullorum-Passed and Pullorum-Clean Stock May Be Sold: In 1957 a pullorum disease law was enacted in Massachusetts that will expedite the eradication of the disease within the State. The Law reads as follows:

"Chapter 129 of the General Laws is hereby amended by inserting after section 26A the following section:—*Section 26B.* No person shall buy, sell or transport within or import into the commonwealth hatching eggs, baby chicks or live poultry, except poultry intended for immediate slaughter or for exhibition subject to permit granted by the state department of agriculture, unless such hatching eggs are the produce of flocks which meet, and such baby chicks or live poultry meet or are the first generation progeny of flocks which meet, the minimum requirements for 'pullorum passed' or 'pullorum clean' grades of poultry, as established by the commissioner of agriculture, or the equivalent thereof. Whoever, himself or by his servant or agent, violates any provision of this section shall be punished for the first offence by a fine of not more than one hundred dollars, and for a subsequent offence by a fine of not less than fifty nor more than two hundred dollars."

This law was designed to aid every poultryman, large and small, to raise poultry free of pullorum infection, which has been a costly disease through the years. The ultimate goal is to attain complete eradication of the disease so that our poultrymen will not have to spend large sums of money each year to test their flocks. Several states have adopted laws to control the spread of pullorum disease and at the 1958 National Plans Conference the delegates voted to request the Federal government to draw up minimum regulations to control the movement of poultry in interstate commerce.

Inspection of Commercial Feedstuffs

by

Feed Control Service Staff

Massachusetts Agricultural Experiment Station



ESTIMATED COST PER COPY \$.17



INSPECTION OF COMMERCIAL FEEDSTUFFS

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INTRODUCTION

There is an increasing awareness among federal and state control officials, feed and drug manufacturers, and others concerned, of their responsibilities to the consumer in regard to the use of drugs in mixed feeds. Because of the accelerated pace in the appearance of new drugs, some uneasiness exists with the thought that perhaps this phase of feed manufacturing is moving too swiftly to permit the exercise of proper controls.

An examination of the data presented in this bulletin shows results of determinations for twenty-five drugs in mixed feeds. These do not represent all of the drugs currently used.

For most state control laboratories the adequate checking of feeds for all drugs guaranteed is becoming a serious problem. It means either an expanded laboratory force or a curtailment in the number of samples analyzed.

For some drugs the lack of suitable assay methods for routine analysis is a disturbing factor. Since the margin between effective and toxic levels for some drugs is relatively narrow, reliable analytical methods are necessary.

Change is inevitable and progress will not be stayed in the feed business as elsewhere. But when the pace gets so fast that feed manufacturers, regulatory services, and others cannot keep up, and the rapidity of change completely outstrips control methods, danger can lie ahead. Sometimes a light application of the brakes is not only beneficial but necessary to prevent what might become a headlong race to disaster.

Apple Pomace and Citrus Pulp

During the past year several samples of Apple Pomace, wet and dried, have been analyzed.

The Dried Apple Pomace was found to contain up to 56 parts per million DDT, 35 parts per million lead, and 7 parts per million arsenic. The wet pomace contained up to 7 parts per million DDT.

Neither the wet nor the dried pomace is suitable for feeding to dairy cattle, since the DDT would appear in the milk. The dried pomace with a high DDT and lead content is unsuitable for feeding to any animals.

The samples of Dried Apple Pomace were shipped into Massachusetts by the Clyde Milling Corp., Clyde, New York. This company also shipped in roughage supplement, "Clyde R.S.10," which contained 5 parts per million DDT. One of the ingredients of this supplement was Dried Apple Pomace. This supplement also was considered unfit for feeding to dairy cattle. The sale of these products was stopped.

Because of the information obtained on the Apple Pomace samples, a number of Citrus Pulp samples were tested for DDT, Methoxychlor, lead, and arsenic. Only insignificant amounts of lead were found. There was no trace of the other insecticides mentioned.

Poison Cases

Most of the poison cases referred to the Massachusetts Feed Control Service are due to lead, either lead paint or lead arsenate. A few cases of poisoning from lead solder and arsenic from weed killer have been found.

Apparently farmers do not regard these materials with the respect they deserve so far as animal health is concerned.

It should be stressed again and again that metallic poisons, such as lead, are not destroyed by fire.

A recent case illustrates this: An old shack in a pasture burned down. Shortly afterwards two animals died. A white powder, thought to be lime, was found in the ashes. The stomach contents of one animal were sent in for analysis, and were found to contain lead and arsenic far in excess of 100 parts per million. The white powder that survived the fire was lead arsenate.

In spite of the fact that animals lick lead paint and die, barns and board fences continue to be painted with paints containing lead. A remarkably small amount of lead paint will cause death. Here again, if a building painted with lead paint burns down, the lead will remain in the ashes and will be a source of danger indefinitely to any animal having access to the ashes.

Dumps are another danger spot. Old paint pails, almost empty lead arsenate bags, etc. should never be discarded in an area accessible to livestock. The only safe way to get rid of metallic poisons is to bury them in a deep hole.

An unusual poisoning case occurred last fall! Contrary to the advice of extension workers, county agents, etc., a farmer turned a herd of cows into a sweet corn field. Within several hours seven cows were dead. Sweet corn is usually sprayed heavily with DDT, if cows eat the corn, DDT appears in their milk, although the animals usually are not seriously affected. In this case, however, death came too suddenly to be a case of DDT poisoning. Upon analysis, large amounts of nitrates were found in the stomach contents and in the stalks of sweet corn. Death was attributed to nitrate poisoning.

As a matter of public health, cows should never be fed sweet corn forage that has been sprayed with DDT. No one likes the thought of drinking milk containing DDT with the attendant hazard to human health, especially to that of young children.

Brands Substantially Complying with Guarantees

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
cme-Evans Co., Inc.		Be-Co Breeder.....	2
Acme Wheat Bran.....	1	Be-Co Grower.....	1
Acme Wheat Standard Middlings with Screening.....	1	Be-Co Grower GY, Medicated.....	1
		Be-Co Layer.....	1
ibers Milling Co.		Bulky Green.....	1
Calif Manna.....	1	Blatchford Calf Meal Co.	
lied Mills, Inc.		Blatchford's Caladine.....	1
Wayne 22% All Mash Turkey Grower.....	1	Borden Grain Co.	
Wayne Calump.....	1	Borden's 14 Fitting.....	2
Wayne Complete Egg.....	1	Borden's Poultry Mash 20.....	2
Wayne Complete Egg (131), Medicated.....	1	Borden's Super Mash 16.....	3
Wayne 16% Dairy.....	1	Borden's Super Starter.....	2
Wayne 20% Dairy.....	1	Borden's Sweet 16 Dairy.....	3
Wayne Dog Food.....	1	Borden's Turkey Fitting.....	1
Wayne 26% Egg & Breeder.....	1	Borden's Turkey Mash.....	2
Wayne Fitting Ration.....	2		
Wayne Horse Feed.....	1	Buckeye Cotton Oil Div.	
Wayne Grower.....	1	Buckeye 44% Protein Solvent Extracted Soybean Oil Meal.....	1
Pork Maker.....	1		
Wayne Rabbit Ration.....	1	Canada Linseed Oil Mills, Ltd.	
Wayne Scratch Feed.....	1	Maple Leaf 34% Protein Expeller Linseed Oil Meal.....	1
Wayne Starter & Grower "E" (136E), Medicated.....	1		
Wayne Sucrene 16% Dairy "P".....	2	Cargill, Inc.	
Wayne Sweet Bulky Feed "E".....	1	34% Protein Solvent Extracted Linseed Oil Meal.....	1
Wayne Test Cow Ration.....	2	44% Protein Solvent Extracted Soy- bean Oil Meal.....	1
Wayne Turkey Breeder.....	1		
Wayne Universal Egg.....	1		
Wayne Universal Grower.....	1		
nerican Crystal Sugar Co.			
Dried Beet Pulp with Molasses.....	1	Carling Brewing Co.	
Plain Dried Beet Pulp.....	1	Carling Brewers Dried Grains.....	1
lantic Processing Co.			
Smith's Life Line Fish Meal.....	1	Clinton Corn Processing Co.	
		CFS Concentrate No. 1.....	1
R. Bacon Grain Co.			
Bacon's Gluten Feed.....	1	Clyde Milling Corp.	
W. Bailey & Co., Inc.		Clyde Complete Layer & Grower.....	1
16% Dairy Ration.....	1	Clyde Complete Rabbit Pellets.....	2
		Clyde Complete Turkey Grower Mash.....	1
rber & Bennett, Inc.		Clyde Dog Food.....	1
Fort Orange 16% Dairy Ration.....	1	Clyde Dry & Freshening Ration.....	1
Fort Orange Dog Food.....	1	Clyde Hi-Cal-Re Complete Layer & Grower, Medicated.....	1
Fort Orange Golden Test Ration.....	1	Clyde Horse Feed.....	1
		Clyde Life Span 15.....	1
lcon Milling Co.		Clyde Life Span 18.....	1
Beacon Balancer Pellets.....	1	Clyde Market Egg Mash.....	1
Beacon Beef Creep & Fitting Ration.....	1	Clyde Medicated Chick Starting Mash.....	1
Beacon Broiler Finisher.....	1	Clyde Milk-Flo 16.....	1
Beacon Cape-Roaster Finisher GY, Medicated.....	1	Clyde 14% Pasture Ration.....	1
Beacon Complete Rabbit Pellets.....	1	Clyde Pig & Sow Ration.....	1
Beacon Complete Starter GY, Medicated.....	1	Clyde R. S. 10.....	1
Beacon Dairy Fitting.....	1	Clyde Test Cow 16.....	1
Beacon Sweet "16" Dairy Ration.....	1	Clyde Test Cow 18.....	1
Beacon Duck Grower-Finisher.....	1		
Beacon "22" Egg Mash.....	1	Commercial Solvents Corp.	
Beacon Grower All-Mash.....	1	Corn Distillers Dried Solubles with Grain.....	1
Beacon "18" Growing Mash.....	1		
Beacon Hi-Energy Test Pel-ets.....	1	Community Service, Inc.	
Beacon Market Egg All-Mash.....	1	CS 16% Dairy Ration.....	1
Beacon Milk Check "16" Dairy Ration.....	2	CS 18% Dairy Ration.....	1
Beacon Milk Check "20" Dairy Ration.....	1	CS Fitting Ration.....	1
Beacon Milk Check Fitting Ration.....	1		
Beacon "15" Test Cow Ration.....	1	Consolidated Rendering Co.	
Beacon "15" Test Cow Ration.....	1	Corenco 4% Meat & Bone Scrap.....	1
Beacon Turkey & Game Bird Fitting.....	1		
Beacon "20" Turkey Grower.....	1	Corn Products Refining Co.	
		Buffalo Brand Protein CornGluten Feed.....	1
		Kasco Complete Dog Food.....	1

*e also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Cover Grain Co.		Eastern States Farmers' Exchange, Inc.	
C & P Grade A Laying Mash.....	1	Calf Starter.....	1
C & P Grade A Laying Mash.....	1	Calving Ration.....	1
Dawe's Laboratories, Inc.		Champion.....	1
FS Blend.....	2	Class Leader.....	1
DCA Food Industries, Inc.		Darimore.....	1
Domaco Winter Wheat Standard		Dairypels 16.....	1
Melting.....	1	Dog Feed.....	1
Dean & Lee		Fulpaill.....	1
Pathfinder Complete Laying.....	1	Milk Grower.....	1
Pioneer Complete Rabbit Pellets.....	1	Milk Grower.....	1
Pioneer Dairy Ration 18.....	1	Pork Builder.....	1
		Rabbittes.....	1
		Supmix.....	1
		Sweepstakes.....	1
		Turkey Finisher.....	1
Dehydrating Process Co.		Eckhart Milling Co.	
Fish Meal.....	1	Ecko Pure Wheat Bran.....	
Delaware Milling Co.		Elmore Milling Co.	
Camp's Super Calf Food.....	1	Elmore Bulky Base.....	1
Camp's Super Dry & Freshening Feed.....	1	Elmore Calf Grain Ration.....	1
Delaware Complete Breeder.....	1	Elmore Completely Balanced Dog Food.....	2
Delaware Complete Layer.....	1	Elmore Complete Growing Ration.....	1
Delaware Complete Starter & Grower.....	1	Elmore Complete Laying Mash.....	1
Delaware Dog Food.....	1	Elmore Complete Market Egg Ration.....	2
Delaware Horse Feed.....	1	Elmore Complete Rabbit Ration Pellets.....	1
Delaware Rabbit Pellets.....	1	Elmore Corn & Oats.....	1
Delaware Scratch Grains.....	1	Elmore Dry & Freshening Ration.....	2
Delaware Sweet 16% Dairy Feed.....	1	Elmore Egg Mash.....	2
Delaware Test 14% Dairy.....	1	Elmore Fine Ground Pure Corn Meal.....	1
Dewhurst Grain Store		Elmore Fitting Ration 14%.....	2
*Dewhurst 16% Dairy Ration.....	1	Elmore Hog Ration.....	2
Dietrich & Gambrill, Inc.		Elmore Horse Feed.....	1
All Mash Breeder Ration.....	1	Elmore Milk Grains "Sixteen".....	2
All Mash Grower.....	1	Elmore Scratch Fed.....	2
All Mash Grower, Medicated.....	2	*Elmore Test Ration 16%.....	1
Special Broiler Mash.....	1	Elmore Test Ration 18%.....	1
Special Broiler Mash, Medicated.....	1	Elmore Turkey Finisher.....	1
D & G Dry Cow Fitting Ration.....	1	Emco 20% Laying Mash.....	1
Frederick Laying Mash.....	1		
Gambrill's Chick Starter, Medicated.....	1	J. W. Eshelman & Sons	
Gambrill's Growing Mash.....	1	Lancaster 16 Dairy Feed.....	1
Gambrill's Laying Mash.....	1	Pennsy Complete Laying Ration.....	2
Distillers Corp., Ltd.		*Pennsy Laying Mash.....	1
Distilco Corn Distiller's Dried Grains.....	1	Red Rose Calf Grower.....	1
Dixon Smith Milling Co.		Red Rose Complete Growing Ration.....	1
Country Squire Dog Food.....	1	Red Rose Complete Laying Ration.....	1
John C. Dow Co.		Red Rose 16 Dairy Feed.....	1
Crunchy.....	1	Red Rose Dog & Puppy Food.....	1
Crumpled Meal.....	1	Red Rose Fitting Ration.....	1
Dow's Dog Biscuits.....	1	Red Rose Goat Ration.....	1
Old Mother Hubbard Kibbled Dog		Red Rose Horse Feed.....	1
Biscuits.....	1	Red Rose Pullet Developer.....	1
		Red Rose Rabbit Pellets.....	1
		S-O-S.....	1
J. L. Dunnell & Son		Essex County Cooperative Farming Assn.	
*Excel 18% Dairy Ration.....	2	S-X All-Mash Breeder.....	1
*Excel Fitting Ration.....	2	S-X All-Mash Grow-Egg.....	2
Excel Laying Mash.....	2	S-X Starter & Broiler.....	1
Horse Feed.....	2	S-X 18% Dairy Ration.....	1
Starter & Grower—Horner's.....	2	S-X 14% Fitting Ration.....	1
		S-X Grow-Egg Mash.....	1
E. I. duPont deNemours		Evans Milling Co.	
duPont Two-Sixty Two Feed Compound.....	1	Emco Hominy Feed.....	1

*See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
Arm Bureau Assn.		Gloucester By-Products, Inc.	
Arm Bureau B. & A. Mash	1	Globpro Brand Fish Meal.....	1
Arm Bureau B. & A. Grower Mash	1	Globpro Brand 60% Protein Fish Meal	2
Arm Bureau Calf Grower.....	1		
Arm Bureau Chick Starter Mash, Medicated.....	1	Gorton's of Gloucester, Inc.	
Arm Bureau Complete Breeder Mash.	1	Gorton's Redfish Meal.....	2
Arm Bureau Complete Developer Mash	1	Gorton's White Fish Meal.....	1
Arm Bureau Complete Developer Mash, Medicated.....	1		
Arm Bureau Complete Market Egg Mash.....	1	D. H. Grandin Milling Co.	
Arm Bureau Dairy 20%.....	1	Grandin's Dry & Freshening Ration...	1
Arm Bureau 14% Dairy Ration.....	1	Grandin's 14% Fitting Ration.....	1
Arm Bureau 16% Dairy Ration.....	2	Grandin's Horse Feed.....	1
Arm Bureau 32% Dairy Supplement...	1	Grandin's 20 Milk Maker.....	1
Arm Bureau Developer Mash, Medi- cated.....	1	Grandin's Pig Starter Pellets.....	1
Arm Bureau Developer Mash.....	1	Grandin's 16 Test Ration.....	1
Arm Bureau Dog Food.....	1	Grandin's 18 Test Ration.....	1
Arm Bureau Fitting Ration.....	1	Grandin's 14% Twin Six Dairy Ration	1
Arm Bureau Hog Grower.....	1	Grandin's 16% Twin Six Dairy Ration	1
Arm Bureau Hog Supplement.....	1		
Arm Bureau Horse Feed.....	1	The Great Atlantic & Pacific Tea Co.	
Arm Bureau Market Egg Mash.....	1	Daily Bone Shape Dog Biscuit.....	1
Arm Bureau Maternity Ration.....	1	Daily Dog Meal.....	1
Arm Bureau 14% Milking Ration.....	1		
Arm Bureau Pig Starter.....	1	Haffenreffer & Co.	
Arm Bureau Scratch Feed.....	1	Haffenreffer Brewers' Dried Yeast.....	1
Arm Bureau Test Dairy Ration.....	1		
Arm Bureau Turkey Developer.....	1	Hales & Hunter Co.	
Arm Bureau Turkey Grower.....	1	Pioneer Bull Feed.....	2
		Pioneer Calf Starter.....	2
ry Milling Co., Inc.		Pioneer Dairy Fitting Feed.....	2
Flory 16% Hi-Efficiency.....	1	Pioneer Dairy Production 16.....	2
Flory 20 Layer.....	1	Pioneer Dry & Freshening.....	2
Flory Superior 16% Dairy Feed.....	2	Pioneer Pelleted Flaked 15 Dairy.....	2
Flory Superior 14% Fitting Ration....	1	Pioneer Pelleted Flaked 18 Dairy.....	1
		Red Comb Broiler & Starter Concentrate	1
ed A. Fountain		Red Comb C Flakes.....	1
Fountain's Complete Growing Pellets ..	2	*Red Comb Chick Starter G, Medicated	1
Fountain's Complete Laying Mash.....	1	Red Comb Complete Cage Layer.....	1
Fountain's Growing Mash.....	2	Red Comb Complete Turkey Grower....	2
Fountain's Laying Mash.....	2	Red Comb Egg & Grower Concentrate ...	2
		*Red Comb Turkey Grower.....	1
neral Mills, Inc.			
Gold Medal Layer Mash.....	1	D. Harbeck & Sons	
Gold Medal Stock Champ.....	1	Egg Mash.....	1
Gold Medal 16% Super Dairy Feed....	2	Special Dairy Ration.....	1
Gold Medal 20% Super Dairy Feed....	1	Welcome Dairy Feed.....	1
Harro Super Chick, Medicated.....	1	Welcome Growing Mash.....	1
Harro Surechump.....	1	Welcome Starter & Broiler Mash.....	1
Harro Suregrow Complete "HE".....	1		
Harro Surelay 8.....	1	Harper Feed Mills, Inc.	
Harro Surelay Complete "HE".....	1	16% Dairy Feed Special.....	1
Harro Surelay "HE".....	1	Harco Complete Calf Ration.....	1
Harro Suremilk 14.....	1	Harco Laying Mash.....	1
Harro Suremilk 16.....	1	Harco Milk Replacer for Young Calves	1
Harro Suremilk 20.....	1		
Harro Sureroaster Complete (GC)	2	Hartz Mountain Products, Corp.	
Harro Sureturk.....	1	Hartz Mountain Dog Yummies.....	1
Harro Sureturk Grower Complete.....	1		
Harro Sureturk Finisher Complete.....	1	H. P. Hood & Sons	
Soybean Oil Meal.....	1	Hood Citrus Pulp.....	2
Washburn's Gold Medal Wheat Standard		Powdered Skim Milk.....	1
Middlings & Ground Wheat Screen- ings Not Exceeding Mill Run.....	1		
neral Foods Corp.		E. C. & W. L. Hopkins, Inc.	
Burt's Hominy Feed.....	1	Granite State Complete Mash.....	1
		Granite State High-Energy Breeder Mash.....	1
		Granite State High-Energy Growing Mash, Medicated.....	1
		Granite State Hog Ration.....	1

See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
The Hubinger Co.		Maritime Milling Co.	
KeOKuk 21% Protein Corn Gluten Feed	1	B-B "16" Dairy Ration.....	1
Illinois Cereal Mills		B-B Dry & Fresh Cow Fitting Ration.....	1
Hominy Feed.....	1	B-B Horse Feed.....	1
International Milling Co.		B-B Pure Corn & Oats.....	1
Blackhawk Wheat Bran with Ground		B-B 16% Special Dairy Ration.....	1
Mixed Screenings Not Exceeding 8%	1	B-B "18" Test Cow Ration.....	1
Blackhawk Wheat Standard Middlings	1	Hi-Test Hog Feed.....	1
Jaquith & Co., Inc.		Ma-Co Complete Grower & Layer	
Jaquith 16% Complete Growing Mash	1	Ration.....	1
Jaquith 16% Complete Layer Mash...	1	Ma-Co Complete Growing & Laying	
Jaquith 20% Dairy Ration.....	1	Ration 18% (Super).....	1
Jaquith Growing Mash.....	1	Ma-Co Scratch Feed.....	1
Jaquith Horse Feed.....	1		
Jaquith Laying Mash.....	1	Marvin Grain Co.	
Jaquith 20% Laying Mash.....	1	Marvin Dog Meal.....	1
Kellogg Co.		The Mennel Milling Co.	
Gro Pup Dog Food.....	1	Memo Pure Wheat Bran.....	1
Gro Pup T Bone Form Dog Biscuits ..	1	Merrimack Farmers Exchange, Inc.	
Kellogg's Hominy Feed.....	1	Merrimack All Mash.....	1
Spencer Kellogg & Sons, Inc.		Merrimack Calf Meal.....	1
SK Soybean Oil Meal.....	1	Merrimack Calf Starter.....	1
H. C. Knoke & Co.		Merrimack 14% Fitting Ration.....	1
Barley Feed.....	1	Merrimack Horse Feed.....	1
Kronick's Coal & Grain Co.		Merrimack White Mountain Dairy....	1
Kronick's Egg Mash.....	1	Miner-Hillard Milling Co.	
Lauhoff Grain Co.		Choice Steam Cooked Hominy Feed...	1
Lauhoff Toasted Corn Flakes.....	1	Minute Maid Corp.	
Vermilion Hominy Feed.....	1	Golden Isle Citrus Pulp.....	1
Libby, McNeill & Libby		Geo. Q. Moon & Co., Inc.	
Headliner Dried Citrus Pulp.....	1	Moon Complete Laying Mash.....	2
Maine Marie Products, Inc.		Moon N. E. Complete Laying Mash...	1
Maine Starter Broiler Supplement.....	1	Moon 16% Dairy Ration.....	1
Mansfield Milling Co.		Moon Dairy Fitting Ration Fortified..	1
Money's Worth Dairy Feed 16%.....	3	Moon Dog Food.....	1
Money's Worth Dairy Feed 20%.....	2	Moon Hog Feed.....	1
Money's Worth Fitting Ration.....	1	Moon Horse Feed.....	1
Money's Worth 14% Fitting Ration...	1	Moon Laying Mash.....	1
Money's Worth Growing Mash.....	1	Moon Poultry Fitting Ration.....	1
Money's Worth High Efficiency Complete Breeder.....	1	Moon Rabbit Pellets.....	2
Money's Worth High Efficiency Complete Growing.....	1	Moon Special Mixture Scratch.....	1
Money's Worth High Efficiency Complete Mash.....	2	Moon 16% Test Ration Fortified.....	1
Money's Worth Laying Mash.....	1	Moon 16% Test Ration.....	1
Money's Worth Rabbit Pellets.....	1	McMillen Feed Mills	
Maple Leaf Milling Co., Ltd.		Master Mix Calflac.....	1
Rex Wheat Bran.....	1	Master Mix Dogburger.....	1
		Master Mix Sweet Flakes.....	1
		Jas. F. Morse & Co.	
		Morse's 47% Meat & Bone Meal.....	1
		Mowat Wilson & Co.	
		Dried Beet Pulp.....	1
		National Biscuit Co.	
		Milk Bone Brand Dog Biscuit.....	1
		Pal Dog Dinner.....	1

*See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number of Samples Analyzed
National Distillers Products Co.		Purina Dog Chow.....	1
Nadrisol.....	1	Purina Dog Chow Checkers.....	1
Ogden Grain Co.		Purina Eggena.....	1
*Ogden 32% Dairy Concentrate.....	1	Purina Fitting Ration.....	1
Ogden Complete Layer.....	1	Purina Game Bird Breeder Layena Complete Ration.....	1
Ogden Complete Starter Grower Layer Breeder.....	1	Purina Goat Chow.....	1
Ogden Horse Feed.....	1	Purina Kibbled Meal.....	1
Ogden Laying Mash.....	1	Purina Layena E.....	2
Ogden Super Pig Ration.....	1	Purina Breeder Layena E.....	1
Ogden Premium 16% Dairy Ration.....	1	Purina Milk Chow D 20%.....	1
Ogden Premium 14% Fitting Ration.....	1	Purina Milk Chow D 16%.....	1
Ogden Rabbit Pellets.....	1	Purina Omolene.....	1
Ogden Scratch Grains.....	1	Purina Poultry Booster Chow.....	1
Park & Pollard Co.		Purina Pullet Developer.....	1
Green Acres 14%.....	1	Purina Rabbit Chow Checkers 20%.....	1
Hi-Prime Complete Turkey Grower.....	1	Purina Rabbit Chow Checkers E.....	1
Lay or Bust Complete Grower & Layer.....	1	Purina Rabbit Chow Checkers.....	1
Milk Maid Calf Starter.....	1	Purina Roaster Chow GC, Medicated.....	1
Milk Maid Dri-Fresh Ration.....	1	Purina Super Game Bird Startena.....	1
Milk Maid Fitting Ration.....	1	Purina Super Layena.....	1
Milk Maid 18% Test Ration.....	1	Purina Turkey Breeder Developer.....	1
Red Ribbon 16% Dairy Ration.....	1	Purina Turkey Broiler Finisher.....	1
Park & Pollard Hi-Speed Horse Feed.....	1	Purina Turkey Finisher No. 2.....	1
Super Lay or Bust All-Mash Grower & Layer.....	2	Purina Turkey Growena No. 1.....	1
Super Lay or Bust Egg Mash.....	2	John Reardon & Sons	
Super Lay or Bust Growing Feed.....	1	Register Brand Fish Meal.....	1
Park H. Parker Grain Co.		Red Star Yeast & Products Co.	
Bill McHugh's Horse Feed.....	1	Torafeed Dried Torula Yeast.....	1
Parker's High A 14% Fitting Ration.....	1	Richardson & Sons, Ltd.	
Parker's Hy Energy Complete Growing Mash.....	1	Cottonseed Expellermeal.....	1
Parker's Laying-Breeding Mash.....	1	D. F. Riley	
Penick & Ford Ltd., Inc.		Riley's 16% Dairy Ration.....	1
*Douglas Corn Gluten Meal.....	2	Riley's 20% Laying Mash.....	1
Pillsbury of Canada, Ltd.		Russell-Miller Milling Co.	
Dandy Wheat Bran.....	1	Occident Wheat Bran.....	1
Quaker Oats Co.		Occident Wheat Standard Middlings.....	2
Ful-O-Pep Calf Starter.....	1	St. Lawrence Starch Co., Ltd.	
Ful-O-Pep High Sweet Blend L.....	1	Bacon's Corn Gluten Feed.....	1
Ful-O-Pep Laying Mash.....	2	Schenley Distillers, Inc.	
Ful-O-Pep Laying Ration.....	2	Schenley's Soludri.....	1
Ful-O-Pep Sweet 16 Dairy Feed.....	1	Jos. E. Seagram & Sons, Inc.	
Ken-L Biskit.....	1	Seagram's Corn Distillers Dried Grains	3
Quaker Sugared Schumacher Feed.....	2	Seagram's Corn Distillers Dried Solubles.....	3
Quaker Oats Co. of Canada, Ltd.		Sherwood Feed Mills, Inc.	
Peterborough Oat Mill By-Product.....	1	Brewers Dried Grains.....	1
Ralston Purina Co.		J. H. Smith Grain, Inc.	
Purina B & M Cow Chow D.....	2	Smith's All Mash Growing & Laying.....	1
Purina D & F Chow.....	2	Smith's 16% Dairy Feed.....	1
Purina Bulky Las.....	1	Southern Fruit Distributors, Inc.	
Purina Calf Startena.....	1	Bluebird Citrus Pulp.....	1
Purina Chick Growena E.....	1		
Purina Chick Growena GC, Medicated.....	1		
Purina Cow Chow Concentrate.....	1		
Purina Cow Chow D 16%.....	1		
Purina Cow Chow D 20%.....	1		

*See also table of "Brands Not Conforming to Guarantees."

Brands Substantially Complying with Guarantees—(Continued)

Manufacturer and Brand	Number of Samples Analyzed	Manufacturer and Brand	Number Samples Analyzed
Spratt's Patent America), Ltd.		Blue Seal Egg Mash.....	1
Spratt's Cat Food.....	1	Blue Seal Fitting Ration.....	1
A. E. Staley Mfg. Co.		Blue Seal Flaked 15.....	1
Staley's 21% Corn Gluten Feed.....	1	Blue Seal Goat Feed.....	1
Staley's 50% Soybean Meal.....	1	Blue Seal Growing Mash.....	1
Standard Brands, Inc.		Blue Seal Horse Feed.....	1
Walter Kendall Hunt Club Dog inner	1	Blue Seal Pig Feed.....	2
F. W. Stock & Sons, Inc.		Blue Seal Poultry & Turkey Fitting...	1
Stock's Wheat Middlings.....	1	Blue Seal Rabbit Pellets.....	1
Sunshine Biscuits	1	Blue Seal Standard 14 Dry Cow	
UCM Wheat Middlings.....	1	Fitting Ration.....	2
Swansea Grain Co.		Blue Seal Standard 16 Dairy Ration...	1
Swansea Quality All Mash Grower....	1	Blue Seal Standard 20 Dairy Ration...	1
Swansea Quality Growing Mash.....	1	Blue Seal Succulent Feed & Calving	
Swansea Quality Super Chick Starter..	1	Ration.....	2
United Coop. Farmers		Blue Seal Super Breeder's Mash.....	1
UCF Calf Starter.....	1	Blue Seal Test Ration.....	1
UCF Complete Breeder.....	1	Blue Seal Turkey Growing.....	1
UCF 16% Dairy.....	1	West Nesbitt, Inc.	
UCF 16% (Plus A) Dairy.....	1	Pure Feed Complete Layer-Breeder...	1
UCF 18% Dairy.....	1	Wilson's Corn Products, Inc.	
UCF 20% Dairy.....	1	Wilson Hominy Feed.....	1
UCF Dry & Freshening Ration.....	1	Wirthmore Feeds, Inc.	
UCF Fitting Ration.....	1	Big W 16% Dairy Feed.....	1
UCF Hi NRG Starter.....	1	Wirthmore Baby Chick Scratch.....	1
UCF Horse Feed.....	1	Wirthmore Calf Starter Meal.....	1
UCF Pig & Hog Feed.....	1	Wirthmore Calving Feed.....	1
UCF Stock Feed.....	1	Wirthmore Chick Starter.....	1
UCF Succulent Dairy.....	1	Wirthmore Chick Starter 401, Medicated	2
Unity Feeds, Inc.		Wirthmore Coarse Test Dairy Feed...	1
Complete Rabbit Pellets.....	1	Wirthmore Complete Breeder Ration...	1
16% Dairy Ration.....	1	Wirthmore Complete Egg Ration.....	1
20% Dairy Ration.....	1	Wirthmore Complete Growing Ration.	2
Dairy & Fitting Ration.....	1	Wirthmore Complete Turkey Breeder	
High Energy Growing & Laying Mash	1	Ration.....	1
Horse Feed.....	1	Wirthmore 16 Dairy Feed.....	2
Pig & Hog Ration.....	1	Wirthmore 20 Dairy Feed.....	1
Super Starter, Medicated.....	1	Wirthmore 14 Dairy Fitting Feed.....	1
Ventura Grain Co.		Wirthmore 36% Dairy Mixing Feed...	1
Every Day 16% Dairy.....	4	Wirthmore 16 Dairy Record Feed...	1
*Every Day 20% Dairy.....	1	Wirthmore 18 Dairy Record Feed...	1
Every Day Fitting Ration.....	2	Wirthmore 32 Dairy Supplement.....	2
Every Day Layer-Breeder Mash.....	2	Wirthmore Fodder Greens.....	1
C. P. Washburn Co.		Wirthmore Green Mountain 14.....	1
Made Right Breeder.....	1	Wirthmore Green Mountain 16.....	2
Made Right Complete Growing Feed...	1	Wirthmore Green Mountain 20.....	1
Made Right Complete Layer.....	1	Wirthmore Grow & Egg Mash.....	1
Made Right 16% Dairy.....	1	Wirthmore Hi-Ener-G 16.....	2
*Made Right 20% Dairy.....	2	Wirthmore Hi-Ener-G Breeder.....	1
Made Right Fitting Ration.....	1	Wirthmore Hog Grower, Medicated...	1
Made Right Growing Feed.....	1	Wirthmore Horse Feed.....	3
*Made Right High Energy Breeder Mash	5	Wirthmore Meatless Mink Food.....	1
Made Right High Energy Broiler.....	1	Wirthmore Mink Food.....	1
Made Right High Energy Grower Mash	1	Wirthmore Pig & Sow Feed, Medicated	1
Made Right High Energy Layer Mash	2	Wirthmore Rabbit Pellets.....	1
Made Right Horse Feed.....	1	Wirthmore Sheep & Goat Feed.....	1
Made Right Stock Feed.....	1	Wirthmore Stock Primer.....	2
H. K. Webster Co.		Wirthmore Super Pellets.....	1
Blue Seal All-Mash Breeder's Ration..	1	Wirthmore Turkey Growing Ration...	1
Blue Seal All-Mash Egg Ration.....	2	Wirthmore Twin-Mix Calf Feed.....	1
Blue Seal All-Mash Grow & Lay.....	1	Wirthmore Stores	
Blue Seal All-Mash Growing Ration...	2	Preferred Complete Grower & Layer ..	2
Blue Seal Calf Starter.....	2	Preferred 16% Dairy.....	2
Blue Seal Coarse 16 Dairy Ration.....	2	Preferred 18% Dairy.....	2
Blue Seal Coarse 20 Dairy Ration.....	1	Preferred 20% Dairy.....	2
		Preferred 14% Fitting Ration.....	2
		Preferred Grower & Layer.....	2
		Preferred High Energy Grower & Layer	1
		The Yantic Grain & Products Co.	
		16% Dairy Ration.....	1

*See also table of "Brands Not Conforming to Guarantees."

Brands Not Conforming to Guarantees

This table includes brands that are one percent or more under guarantee in protein or fat or are one and one-half percent or more over guarantee in fiber.

Manufacturer and Brand	Protein		Fat		Fiber	
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed
	%	%	%	%	%	%
P. Adams Co.						
Greylock Brand Laying Mash.....	19.0	20.	3.6	4.	4.2	5.5
Greylock Brand 16 Per Cent Dairy Feed..	14.1	16.	—	3.	8.5	10.
led Mills, Inc.						
*Wayne Medicated H-A-D (170).....	22.3	20.	3.6	5.	—	4.
*Wayne Turkey Developer (227), Med- icated.....	22.1	26.	4.1	4.	—	5.5
acon Milling Co.						
Beacon Milk Check "16" Dairy Ration..	15.0	16.	4.1	3.	6.3	10.
own-Forman Distillers Corp.						
3F Corn Distillers Dried Solubles.....	29.6	24.	5.5	8.	—	4.
nsolidated Rendering Co.						
Corenco 50% Meat & Bone Scrap.....	48.4	50.	9.1	6.	—	—
an & Lec						
*Pathfinder Medicated Jumbo Starter- Broiler (4A) (A-B-NCB-AGS).....	24.7	24.	5.8	7.	—	3.
*Pioneer Dairy Ration 16.....	12.3	16.	—	3.5	7.5	8.5
aware Mills, Inc.						
*Delaware Chick Starter, Medicated....	19.0	20.	—	3.	5.3	5.5
whurst Grain Store						
Dewhurst's 16% Dairy Ration.....	14.8	16.	4.1	4.	7.9	8.5
w Brewery, Ltd.						
Dried Brewers' Grains.....	25.6	22.	5.6	7.	14.7	15.
Dried Brewers' Grains.....	21.5	22.	5.7	7.	14.3	15.
L. Dunnell & Son						
Excel 18% Dairy Ration.....	16.5	18.	3.6	4.5	7.7	9.
Excel Fitting Ration.....	12.4	14.	3.6	5.	6.5	10.
Excel Fitting Ration.....	14.0	14.	4.0	5.	6.7	10.
stern States Farmers' Exchange, Inc.						
*Eastern States Diethylstilbestrol Mix- ture (Beefmix).....	30.8	32.	—	1.5	—	12.
Elmore Milling Co., Inc.						
**Elmore Pacemaker 16% Dairy Ration	20.2	16.	—	3.	—	10.
**Elmore Pacemaker 16% Dairy Ration	20.3	16.	—	3.	—	10.
**Elmore Pacemaker 16% Dairy Ration	20.4	16.	—	3.	—	10.
**Elmore Pacemaker 18% Dairy Ration	19.7	18.	—	3.	—	10.
*Elmore Test Ration 16%.....	14.4	16.	4.2	4.	6.7	9.
*Elmore Test Ration 16%.....	14.7	16.	4.0	4.	—	9.
Emco Complete Laying Mash.....	14.9	16.	—	3.	4.4	6.
Emco Complete Laying Mash.....	15.0	16.	—	3.	4.3	6.
W. Eshelman & Sons						
Red Rose Calf Starter.....	16.4	18.	—	3.	7.7	8.
Pensy Laying Mash.....	17.2	20.	—	3.5	5.2	7.5
m Bureau Assn.						
Low Lactation Ration.....	17.1	15.	—	3.5	7.0	5.5
Fry Milling Co.						
*Flory 22% Broiler Starter (N), Medi- cated.....	19.2	22.	—	5.	3.2	3.5
General Foods Corp.						
Mixed Cereal Feed.....	8.9	10.	—	1.5	1.7	4.

*See also table "Brands Substantially Complying with Guarantees."

**See also table "Feeds Containing Drugs."

**Protein equivalent from urea exceeds maximum guarantee.

Brands Not Conforming to Guarantees—Continued

This table includes brands that are one percent or more under guarantee in protein or fat or are one and one-half percent or more over guarantee in fiber.

Manufacturer and Brand	Protein		Fat		Fiber	
	Found	Guar- anteed	Found	Guar- anteed	Found	Guar- anteed
	%	%	%	%	%	%
Hales & Hunter Co.						
**Red Comb Chick Starter G, Medicated*	18.4	20.	—	3.	5.0	6.
*Red Comb Turkey Grower.....	21.4	23.	—	3.	—	6.
Jaquith & Co., Inc.						
(J) Coarse 16 $\frac{1}{2}$ Dairy Ration.....	14.4	16.	—	3.5	5.7	7.
Kronick's Coal & Grain Co.						
Kronick's Dairy Ration 16 $\frac{1}{2}$	14.8	16.	5.0	4.	5.6	9.
Mansfield Milling Co.						
Money's Worth High Efficiency Laying.. Mash.....	19.0	20.	—	3.	4.1	4.
McMillen Feed Mills						
Master Mix Sweet Flakes.....	11.1	7.	4.4	1.5	27.2	25.
Geo. Q. Moon & Co., Inc.						
32% Supplement Ration.....	31.0	32.	—	2.	8.1	9.
**Moon Turkey Starter Mash.....	27.0	28.	—	3.	5.4	6.
**Moon Turkey Starter Mash.....	25.9	28.	—	3.	5.6	6.
**Moon Turkey Grower Mash.....	18.0	20.	3.8	4.	5.0	6.
National Distillers Products Co.						
Corn Distillers Dried Grains.....	22.3	25.	10.2	7.	17.7	15.
Ogden Grain Co.						
**Ogden Broiler Finisher Hi-Fat, Medi- cated.....	18.7	18.5	4.5	7.	—	3.
***32% Dairy Concentrate*.....	33.0	32.	—	2.	—	9.
Park & Pollard Co., Inc.						
Red Ribbon 20% Dairy Ration.....	18.2	20.	—	3.	10.2	12.
Penick & Ford Ltd., Inc.						
*Douglas Corn Gluten Meal.....	39.7	41.	—	1.5	—	6.
The Quaker Oats Co.						
Ful-O-Pep Egg Mash.....	18.5	20.	3.5	2.5	6.6	8.
Unity Feeds, Inc.						
**Broiler Starter, Medicated.....	25.0	25.	5.9	7.	2.0	3.
Ventura Grain Co.						
*Every Day 20% Dairy.....	20.7	20.	2.8	4.	—	7.
*Every Day 20% Dairy.....	20.9	20.	3.0	4.	—	7.
C. P. Washburn Co.						
*Made Right 20% Dairy.....	18.0	20.	—	3.5	6.6	8.
*Made Right High Energy Breeder Mash.....	13.3	16.	—	3.	3.3	4.
H. K. Webster Co.						
**Blue Seal Turkey Starter, Medicated...	26.9	28.	4.3	5.	—	4.
Wirthmore Feeds, Inc.						
Wirthmore Dog Food Pellets.....	23.6	25.	7.9	7.	3.4	5.
**Wirthmore Turkey Starter 419, Medi- cated.....	21.4	28.	4.1	4.	4.4	5.

*See also table "Brands Substantially Complying with Guarantees."

**See also table "Feeds Containing Drugs."

***Protein equivalent from urea exceeds maximum guarantee.

Feeds Containing Drugs

Manufacturer and Brand	Drug	Found	Guaranteed
ed Mills, Inc.			
Wayne Complete Egg (131), Med...	Arsanilic acid	.0055% ¹	.01%
Wayne Egg (122), Med...	Arsanilic acid	.015%	.015%
Wayne Medicated Bio-Ruminutra.	Chlortetracycline ²	.23 g/lb	.175 g/lb
Wayne Medicated H-A-D (170)...	{ Chlortetracycline Oxytetracycline ³	.025 g/lb	.025 g/lb
Wayne Medicated Turkey Developer (226)...	Furazolidone	.011%	.011%
Wayne Rocket Broiler Starter (186), Med....	3-Nitro ⁵	.005%	.005%
Wayne Rocket Broiler Finisher (196), Med....	3-Nitro	.0056%	.005%
Wayne Tail Curler, Med.....	Arsanilic acid	.01%	.01%
Wayne Turkey Developer (227), Med.....	4-Nitro ⁶	.029%	.025%
Wayne Turkey Pre-Starter, Med.....	{ Sulfaquinoxaline 3-Nitro	.0185% .0041%	.0175% .0025%
Wayne Universal Egg (128), Med.	Arsanilic acid	.01%	.01%
W. Bailey & Co., Inc.			
Bailey's Complete Egg Ration, Med.....	Arsanilic acid	.009%	.009%
Beacon Milling Co.			
Beacon Broiler Finisher NCA, Med.....	{ Arsanic acid Niacarbazin	.009% .0125%	.009% .0125%
Beacon Medicated Broiler Finisher 2CT-NCA.....	{ Niacarbazin Arsanic acid	.0125% .0098%	.0125% .009%
Beacon Starter-Broiler 1CT-NCA, Med.	{ Chlortetracycline Niacarbazin	0.1 g/lb .0125%	0.1 g/lb .0125%
Beacon Starter-Broiler GYA, Med.....	{ Arsanic acid Chlortetracycline	.0098% .065 g/lb	.009% .05 g/lb
Beacon Turkey Finisher All-Mash H, Med.....	Arsanic acid	.0095%	.009%
Beacon "20" Turkey Grower H, Med.....	Nithiazide	.0140% ¹	.025%
Beacon "20" Turkey Grower H, Med.....	Nithiazide	.015%	.015%
Beacon Turkey Starter SQA, Med.....	{ Sulfaquinoxaline Arsanic acid	.0143% ¹ .0175%	.025% .0175%
de Milling Corp.			
Lyde Grow-Rite.....	Niacarbazin	.0084% ¹	.0125%
Lyde Hi-Cal-Re Complete Layer & Grower.....	{ Zinc bacitracin Penicillin	7	18.75g/ton 6.25g/ton
Lyde Meat Bird Finisher Pellets, Med.....	Arsanic acid	.009%	.009%
Lyde H. E. Broiler Mash, Med.....	{ Niacarbazin Arsanic acid	.01% .009%	.01% .009%
Lyde Medicated Complete Calf Starter.....	Niacarbazin	.01%	.01%
Lyde Medicated Hi-Cal-Re Complete Layer & Grower.....	Chlortetracycline	.020g/lb	.025g/lb
Lyde Medicated Hi-Cal-Re Complete Layer & Grower.....	Zinc bacitracin	.012g/lb	.01g lb
	{ Zinc bacitracin Chlortetracycline	.021g/lb none ¹	.01g lb .015g/lb
Dawe's Laboratories, Inc.			
Dawe's Broiler Base 1958.....	Arsanic acid	.79%	.79%

Deficient

Chlortetracycline hydrochloride

Oxytetracycline hydrochloride

Chlortetracycline hydrochloride and oxytetracycline hydrochloride were measured as chlortetracycline hydrochloride. Result indicates these antibiotics to be present in amounts guaranteed.

3-Nitro-4-Hydroxyphenylarsonic acid

4-Nitrophenylarsonic acid

Zinc bacitracin and penicillin were measured as penicillin. Result indicates these antibiotics to be present in amounts guaranteed.

Feeds Containing Drugs—(Continued)

Manufacturer and Brand	Drug	Found	Guaranteed
Dean & Lee			
Pathfinder Complete Breeder.....	{Chlortetracycline	.055g/lb	.8
	{Bacitracin	.046g/lb	.8
Pathfinder Complete Breeder.....	{Sulfaquinoxaline	.120%	.9
Pathfinder Hi-Energy Jumbo Starter-Broiler.....	{Nicarbazin	.0015 ¹	.0125
	{3-Nitro	.054%	.005%
Pathfinder Hi-Energy Super Finisher (2B).....	{Nicarbazin	.014%	.0125%
	{3-Nitro	.0018%	.005%
Pathfinder Hi-Energy Super Finisher (2B).....	{Nicarbazin	.0021% ¹	.0125%
	{3-Nitro	.005% ¹	.005%
Pathfinder Hi-Energy Super Finisher (4B) ¹⁰	{Nicarbazin	none	.0125%
	{3-Nitro	.005%	.005%
	{Bacitracin	.05g/lb	.05g/lb
	{Chlortetracycline	.06g/lb	.05g/lb
	{Acetyl-sulfanilamide ¹¹	.029%	.....
	{Dinitrobenzamide	.020%	***
Pathfinder Hi-Energy Super Finisher (4B).....	{3-Nitro	.005%	.005%
	{Nicarbazin	none ¹	.0125%
Pathfinder Jumbo Starter-Broiler (4A).....	{Nicarbazin	none ¹	.0125%
	{3N-itro	.005%	.005%
Pathfinder Jumbo Starter-Broiler (4A).....	{Nicarbazin	.0014% ¹	.0125%
	{3-Nitro	.005%	.005%
Pathfinder Jumbo Starter-Broiler (4A).....	{Nicarbazin	.0015% ¹	.0125%
	{3-Nitro	.005%	.005%
	{Bacitracin	.15g/lb	.05g/lb
	{Chlortetracycline	.058g/lb	.05g/lb
Pathfinder Jumbo Starter-Broiler (4A) ¹⁰	{Nicarbazin	none ¹	.0125%
	{3-Nitro	.0053%	.005%
	{Bacitracin	.053g/lb	.05g/lb
	{Chlortetracycline	.085g/lb	.05g/lb
	{Acetyl-sulfanilamide	.040%	.....
	{Dinitrobenzamide	.022%	.....
Delaware Mills, Inc.	Nicarbazin	.01%	.01%
Dietrich & Gambrell, Inc.			
D & G All-Mash Turkey Starter.....	Sulfaquinoxaline	.0175%	.0175%
D & G Medicated Fix-etts.....	Chlortetracycline	.056g/lb	.05g/lb
D & G Medicated Fix-etts.....	Chlortetracycline	.05g/lb	.05g/lb
Eastern States Farmers' Exchange, Inc.			
Breeder Mash.....	Arsanilic acid	.0132%	.0132%
Broiler Finisher.....	{Nicarbazin	.0125%	.0125%
	{Arsanilic acid	.009%	.0099%
Broiler Finisher.....	{Arsanilic acid	.010%	.0099%
Cashmaker.....	{Arsanilic acid	.0110%	.0099%
Cashmaker.....	{Arsanilic acid	.0103%	.0099%
Cashmaker.....	{Arsanilic acid	.011%	.0099%
Diethylstilbestrol Mixture in Beefmix.....	{Diethylstilbestrol	.0011%	.0011%
Goalmaker.....	{Arsanilic acid	.0099%	.0099%
Matchmaker.....	{Arsanilic acid	.0132%	.0132%
Medicated-Lacto-Life.....	{Lactic acid equiv.	2.9%	2.9%
Medicated-Pork Primer.....	{Arsanilic acid	.0099%	.0099%
	{Chlortetracycline	4	.0125g/
	{Oxytetracycline	4	.0125g/
Medicated-Sentinel.....	{Chlortetracycline	4	.05g/lb
	{Oxytetracycline	4	.05g/lb
Medicated Turkey-Ginisher-F.....	{Furazolidone	.011%	.011%
Medicated Turkey-Grower-F.....	{Furazolidone	.011%	.011%
Pacemaker.....	{Arsanilic acid	.0105%	.0099%
Pork Gainer.....	{Arsanilic acid	.0099%	.0099%

¹ Deficient⁴ Chlortetracycline hydrochloride and oxytetracycline hydrochloride were measured as chlortetracycline hydrochloride. Result indicates these antibiotics to be present in amounts guaranteed.⁸ Aureomycin 110 grams per ton. Bacitracin 92 grams per ton. Neither antibiotic guaranteed. With such a high level of antibiotics the declaration of "Antibiotic feed supplement" is not sufficient.⁹ Feed ordered to contain low level of Sulfaquinoxaline¹⁰ Mislabeled. Nicarbazin declared. None found. Acetyl-(para-nitrophenyl)-sulfanilamide and Dinitrobenzamide found but not declared¹¹ Acetyl-(para-nitrophenyl)-sulfanilamide

Feeds Containing Drugs—(Continued)

Manufacturer and Brand	Drug	Found	Guaranteed
Elmore Milling Co., Inc.			
Elmore Chixsaver (1N)	{ 3-Nitro	.0084%	.005%
	{ Nicarbazin	.0088%	.0125%
Elmore Chixsaver (1S)	{ Sulfaquinoxaline	.022%	.015%
	{ 3-Nitro	.0065%	.005%
Elmore Chixsaver (1S)	{ Sulfaquinoxaline	.016%	.015%
	{ 3-Nitro	.0031%	.005%
Elmore Egg Mash (1A)	{ 3-Nitro	.0053%	.005%
Elmore Egg Mash (1A)	{ 3-Nitro	.0014% ¹	.005%
W. Eshelman & Sons			
Red Rose Broiler Finisher	{ Nicarbazin	.0125%	.0125%
	{ 3-Nitro	.0061%	.005%
Red Rose Medicated T-C Feed	{ Chlortetracycline		.025g/lb
	{ Oxytetracycline		.025g/lb
Sex County Coop. Farming Assn.			
S-X All-Mash Grow-Egg 824	Sulfaquinoxaline	.016%	.0125%
S-X Starter & Broiler Connecticut Formula 826	Sodium arsenilate	.006%	.0088%
Farm Bureau Assn.			
Farm Bureau Complete Grower Layer Mash	Arsanilic acid	.0115%	.01%
Farm Bureau High Energy Broiler Finisher	Arsanilic acid	.009%	.009%
Farm Bureau High Energy Broiler Mash	Arsanilic acid	.009%	.009%
Farm Bureau Stress Mash	{ Bacitracin	.066g/lb	.025g/lb
	{ Chlortetracycline	.04g/lb	.025g/lb
Flory Milling Co.			
Flory 18% Broiler Finisher	Arsanilic acid .....	.0065%	.01%
Flory 22% Broiler Starter (N)	{ Nicarbazin	.008%	.0125%
	{ Arsanic acid ..	.006%	.01%
Flory Medicated Stim-U-Lets	{ Chlortetracycline		.05g/lb
	{ Oxytetracycline		.05g/lb
Fountain's			
Fountain's Nitrophenide Mixture in Fountain's Improved High Energy Starter-Broiler Ration	Nitrophenide	.020%	.01875%
Fountain's Nitrophenide Mixture in Fountain's Improved High Energy Starter-Broiler Ration	Nitrophenide	.0187%	.01875%
General Mills, Inc.			
Larro .007% Dienestrol Diacetate with Nicarbazin & Arsonic Growth Stimulant in Surebroiler Caponette 20	{ Dienestrol diacetate	.007%	.007%
	{ Nicarbazin	.01%	.01%
	{ 3-Nitro	.005%	.005%
Larro .0023% Dienestrol Diacetate with Nicarbazin & Arsonic Growth Stimulant in Surebroiler Caponette 20	{ Dienestrol diacetate	.0026%	.0023%
	{ Nicarbazin	.01%	.01%
	{ 3-Nitro	.005%	.005%
Larro Medicated Poultry Surelift	{ Furazolidone	.0086%	.011%
	{ Chlortetracycline		.025g/lb
	{ Oxytetracycline		.025g/lb
Larro Medicated Surelift	{ Chlortetracycline		.05g/lb
	{ Oxytetracycline		.05g/lb
Larro Surebroiler Caponette 20 (GC-AGS)	{ 3-Nitro	.005%	.005%
Larro Surebroiler Finisher 23	{ 3-Nitro	.0046%	.0045%
Larro Surebroiler Finisher 23	{ 3-Nitro	.0027%	.0045%
Larro Surebroiler Starter 26 (GC-AGS)	{ 3-Nitro	.005%	.005%
Larro Surebroiler Starter 26 (GC-AGS)	{ 3-Nitro	.0086%	.005%
Larro Surebroiler Starter 26 (GC-AGS)	{ 3-Nitro	.005%	.005%
Larro Suregrow Complete "HE" (NCB)	{ Nicarbazin	.01%	.01%
Larro Surelay Complete "HE" (.00275FRZ)	{ Furazolidone	.00275%	.00275%
Larro Surepork Grower Complete (AGS)	{ Arsanic acid	.01%	.01%
Larro Superpoult Medicated (SQ)	{ Sulfaquinoxaline	.0175%	.0175%

¹ Deficient² Chlortetracycline hydrochloride and oxytetracycline hydrochloride were measured as chlortetracycline hydrochloride. Result indicates these antibiotics to be present in amounts guaranteed.

Feeds Containing Drugs—(Continued)

Manufacturer and Brand	Drug	Found	Guaranteed
Hales & Hunter Co.			
Red Comb Medicated Poult Saver.....	{Furazolidone Chlortetracycline Oxytetracycline	.011% ¹ 4 .052g/lb .025g/lb	.011% .052g/lb .025g/lb
Red Comb Pioneer Wormer.....	Piperazine	.12%	.12%
Red Comb Turkey Grower H.....	4-Nitro	.025%	.025%
Red Comb Turkey Starter S.....	Sulfaquinoxaline	.022%	.0175%
E. C. & W. L. Hopkins, Inc.			
Granite State Broiler Mash.....	Arsanilic acid	.0095%	.0088%
Jaquith & Co., Inc.			
Jaquith High Efficiency Starter Mash.....	Sulfaquinoxaline	.0175%	.0175%
Mansfield Milling Co.			
Money's Worth High Efficiency Broiler.....	Sulfaquinoxaline	.013%	.0125%
Money's Worth High Efficiency Starter.....	Sulfaquinoxaline	.021%	.0125%
Maritime Milling Co.			
BB Calf D-Life.....	Chlortetracycline	.039g/lb	.02g/lb
Ma-Co Broiler Finishing Ration.....	Arsanilic acid	.0160%	.01%
Ma-Co Complete Chick Starter Ration.....	{Arsanilic acid Total bifurans ¹² Furazolidene	.0125% .0063% .002% ¹	.01% .0063% .011%
Ma-Co Medicated Stress-Aid Ration.....	{Bacitracin Procaine penicillin Chlortetracycline	13 13 .096g/lb	.019g/lb .006g/lb .025g/lb
McMillen Feed Mills			
Master Mix Pig-Ets (52A).....	Arsanilic acid	.007%	.01%
Merrimack Farmers' Exchange, Inc.			
Merrimack Hi-F Grower-Layer.....	Arsanilic acid	.009%	.009%
Geo. Q. Moon & Co., Inc.			
Moon Histostat Mix in Moon Turkey Fattener Mash	4-Nitro	.002% ¹	.025%
Moon Histostat Mix in Moon Turkey Fattener Mash	4-Nitro	.013% ¹	.025%
Moon Histostat Mix in Moon Turkey Grower Mash	4-Nitro	.017%	.025%
Moon Histostat Mix in Moon Turkey Grower Mash	4-Nitro	.014% ¹	.025%
Moon Turkey Starter Mash.....	{Sulfaquinoxaline 4-Nitro	.017% .021%	.025%
Moon's Sulfaquinoxaline Mixture in Moon Turkey Starter Mash.....	Sulfaquinoxaline	.019%	.0175%
Ogden Grain Co.			
Ogden Broiler Finisher Hi-Fat.....	Nicarbazin	.0092%	.0125%
	Arsanilic acid	.0103%	.01%
Ogden Big "O" Hi-Energy Laying Mash ¹⁴	Oxytetracycline	.19g/lb	.025g/lb
Ogden Hi-Energy Starter & Broiler.....	Nicarbazin	.0074% ¹	.0125%
The Park & Pollard Co., Inc.			
Hi-Prime Turkey Starter.....	4-Nitro	.010% ¹	.025%
Lay or Bust Complete Chick Starter.....	Total bifurans	.0046%	.0063%
Super Hi-Power 24% Broiler Ration.....	Arsanilic acid	.0125%	.01%
Super Lay or Bust Chick Starter.....	Arsenosobenzene	.0044% ¹⁵	.002%
Super Lay or Bust Chick Starter.....	Arsenosobenzene	.0024%	.002%
Super Lay or Bust T.N.T.....	Chlortetracycline	.025 g/lb	.025 g/lb

¹ Deficient¹ Chlortetracycline hydrochloride and oxytetracycline hydrochloride were measured as chlortetracycline hydrochloride. Result indicates these antibiotics to be present in amounts guaranteed.¹² Nitrofurazone & Furazolidone¹³ Below measurable amount¹⁴ Sample contains as much or more unguaranteed chlortetracycline hydrochloride as it does the guaranteed antibiotic¹⁵ Excessive

Feeds Containing Drugs (Continued)

Manufacturer and Brand	Drug	Found	Guaranteed
Ralston Purina Co.			
Purina Broiler Chow Starter E.	3-Nitro	.005%	.005%
	Nicarbazin	.0125%	.0125%
Purina Broiler Chow Starter E.	3-Nitro	.0052%	.005%
Purina Broiler Chow Starter E.	Chlortetracycline	.10g/lb	.1g/lb
	3-Nitro	.005%	.005%
	Nicarbazin	.0125%	.0125%
Purina Broiler Chow Finisher E.	3-Nitro	.005%	.005%
	Nicarbazin	.0125%	.0125%
Purina of Broiler Chow Finisher V	3-Nitro	.0051%	.005%
	Nicarbazin	.0125%	.0125%
Purina Capena 3 NC	3-Nitro	.005%	.005%
	Nicarbazin	.0125%	.0125%
Purina Hog Fatena	3-Nitro	.0025%	.0025%
Purina Medicated Check-R-Aid	Furazolidone	.011%	.011%
	Chlortetracycline	.061g/lb	.05g/lb
Purina Pullet Developer NC	Nicarbazin	.01%	.01%
Purina Super Chick Startene 3 NC No. 2	3-Nitro	.0027%	.0025%
	Nicarbazin	.0125%	.0125%
Purina Super Chick Startene 3 NC No. 2	3-Nitro	.0027%	.0025%
	Nicarbazin	.0125%	.0125%
Purina Super Chick Startena 3 NC No. 2	3-Nitro	.0025%	.0025%
	Nicarbazin	.0032% ¹	.0125%
Purina Super Chick Startena 3 GC	3-Nitro	.0034%	.0025%
Purina Turkey Fatena NH	Nitrothiazole ¹⁶	.015%	.015%
Purina Turkey Finisher No. 1 NH	Nitrothiazole	.015%	.015%
Purina Turkey Finisher No. 2 NH	Nitrothiazole	.015%	.015%
Purina Turkey Growena No. 1 NH	Nitrothiazole	.015%	.015%
Purina Turkey Growena No. 1 NH	Nitrothiazole	.015%	.015%
Purina Turkey Growena No. 2 NH	Nitrothiazole	.015%	.015%
Purina Turkey Pre-Starter SQ	Sulfaquinoxaline	.0175%	.0175%
Purina Turkey Startena SQ	Sulfaquinoxaline	.0175%	.0175%
Swansea Grain Co.			
Swansea Quality All Mash Layer	3-Nitro	.0057%	.0057%
United Cooperative Farmers, Inc.			
UCF HI NRG All Mash Breeder	Arsanilic acid	.0099%	.0099%
UCF HI NRG Broiler Finisher	Nicarbazin	.0125%	.0125%
	Arsanilic acid	.0099%	.0099%
UCF HI NRG All Mash Grower & Layer	Arsanilic acid	.0065%	.0099%
UCF HI NRG Broiler Starter	Nicarbazin	.0125%	.0125%
	Arsanilic acid	.0099%	.0099%
UCF HI NRG Starter	Sulfaquinoxaline	.0170%	.0150%
UCF Grower	Arsanilic acid	.0099%	.0099%
UCF Layer	Arsanilic acid	.0099%	.0099%
UCF Medicated Booster—100	Chlortetracycline	.038g/lb	.025g/lb
	Bacitracin	.033g/lb	.025g/lb
	Nitrofurazone	.0055%	.0055%
	Furazolidone	.0010%	.0008%
	Chlortetracycline	.16g/lb	.1g/lb
UCF Medicated Booster—200			
Unity Feeds, Inc.			
Trim	Arsanilic acid	.0065%	
Ventura Grain Co.			
Every Day Chick Starter	Sulfaquinoxaline	.002% ¹	.0175%
	Arsanilic acid	.003%	.005%
Every Day Chick Starter	Sulfaquinoxaline	.021%	.0175%
	Arsanilic acid	.010%	.005%

¹ Deficient¹⁶ 2-Acetyl-amino-5-Nitrothiazole

Feeds Containing Drugs—(Continued)

Manufacturer and Brand	Drug	Found	Guaranteed
C. P. Washburn Co.			
Made Right High Energy Breeder Mash.....	3-Nitro	.005%	.005%
Made Right High Energy Breeder Mash.....	3-Nitro	.005%	.005%
Made Right High Energy Breeder Mash.....	3-Nitro	.005%	.005%
Made Right Complete Breeder.....	3-Nitro	.0061%	.005%
Made Right High Energy Layer Mash.....	3-Nitro	.0054%	.005%
Made Right Starting Feed.....	Sulfaquinoxaline	.016%	.015%
Sulfaquinoxaline Mixture with Made Right High Energy Broiler.....	Sulfaquinoxaline	.021%	.015%
H. K. Webster Co.			
Blue Seal Chick Starter.....	Sulfaquinoxaline	.0175%	.0175%
	Arsanilic acid	.0104%	.01%
Blue Seal Chick Starter.....	Arsanilic acid	.014%	.01%
	Sulfaquinoxaline	.01%	
Blue Seal Fat & Finish Ration.....	Nicarbazin	.0074%	.0125%
Blue Seal Fat & Finish Ration.....	Arsanilic acid	.01%	.01%
Blue Seal Fat & Finish Ration.....	Arsanilic acid	.01%	.01%
	Nicarbazin	.0125%	.0125%
Blue Seal Medicated Chick Booster.....	Chlortetracycline	.071g/lb	.05g/lb
	Furazolidone	.011%	.011%
	Nicarbazin	.0125%	.0125%
Blue Seal Medicated Ketosis Control.....	Sodium propionate	12.5%	12.5%
Blue Seal Medicated Poultry Zest.....	Chlortetracycline	.062g/lb	.05g/lb
	Furazolidone	.011%	.011%
Blue Seal Nicarbazine Mixture in Advance Broiler	Nicarbazin	.0125%	.0125%
Blue Seal Nicarbazine Mixture in Advance Broiler	Nicarbazin	.0125%	.0125%
Blue Seal Pig Feed.....	Arsanilic acid	.009%	
Blue Seal Poultry Wormer.....	Piperazine	.068%	.10%
	Phenothiazine	.60%	.60%
	Piperazine	.10%	.60%
	Phenothiazine	.60%	.60%
Blue Seal Rabbit Pellets.....	Arsanilic acid	.0035%	
Blue Seal Sulfaquinoxaline Mixture.....	Sulfaquinoxaline	0.10%	.1%
Blue Seal Turkey Growing.....	4-Nitro	.025%	.025%
Blue Seal Turkey Starter.....	Sulfaquinoxaline	.012%	.0175%
	Arsanilic acid	.012%	.01%
Wirthmore Feeds, Inc.			
Wirthmore Broiler Starter 410.....	Nicarbazin	.0126%	.0125%
	Sodium arsanilate	.0095%	.0088%
Wirthmore Chick Starter 400.....	Sulfaquinoxaline	.028%	.0175%
Wirthmore Coccidiosis Treatment Ration 411.....	Sulfaquinoxaline	.108%	.10%
Wirthmore Complete Growing Ration 409.....	Sulfaquinoxaline	.0125%	.0125%
Wirthmore Complete Growing Ration 409.....	Sulfaquinoxaline	.0165%	.0125%
Wirthmore Complete Turkey Growing Ration 442.....	4-Nitro	.025%	.025%
Wirthmore Hi-Energy 16.....	Nicarbazin	.0043%	
Wirthmore Improved Hi-Ener-G Broiler Ration 404	Sodium arsanilate	.0095%	.0088%
Wirthmore Improved Hi-Ener-G Broiler Ration 404	Sodium arsanilate	.0098%	.0088%
Wirthmore Improved Hi-Ener-G Broiler Ration 404	Sodium arsanilate	.0090%	.0088%
Wirthmore Medicated Broiler Perk 406.....	Furazolidone	.0064% ¹	.011%
	Nicarbazin	.0125%	.0125%
	Chlortetracycline	.059g/lb	.05g/lb
Wirthmore Medicated Quickies.....	Chlortetracycline	.11g/lb	.1g/lb
Wirthmore Medicated Quickies.....	Chlortetracycline	.135g/lb	.1g/lb
Wirthmore Medicated Rabbit Pellets 553.....	Chlortetracycline	.033g/lb	.05g/lb
	Sulfaquinoxaline	.016%	.025%
	Furazolidone	.022%	.022%
Wirthmore Medicated Treat 431.....	Piperazine	.060% ¹	.125%
Wirthmore Poultry Wormer.....	Phenothiazine	.32%	.45%
	4-Nitro	.014% ¹	.025%
Wirthmore Turkey Growing Ration 441.....	Sulfaquinoxaline	.0175%	.0175%
Wirthmore Turkey Starter 419.....			
Wirthmore Stores			
Preferred Chick Starter.....	Nitrophenide	.0170%	.0125%
Preferred Complete Grower & Layer.....	Nitrophenide	.014%	.0125%
Preferred Starter & Broiler Ration.....	Nitrophenide	.018%	.0125%

¹ Deficient.¹⁷ Contains .0043% nicarbazine. None declared.

Drugs and Drug Mixtures

Manufacturer and Brand	Drug	Found	Guaranteed
Abbott Laboratories Pro-Gen Sodium.....	Sodium arsanilate	98.0%	—
American Cyanamid Co. Arsanilic acid 20%....	Arsanilic acid	20.0%	20%
Aurofac 2A.....	Chlortetracycline hydrochloride	3.9 g/lb	3.6 g/lb
Aurofac 2A.....	Chlortetracycline hydrochloride	4.5 g/lb	3.6 g/lb
Aurofac 2A.....	Chlortetracycline hydrochloride	4.5 g/lb	3.6 g/lb
Aurofac 2A.....	Chlortetracycline hydrochloride	4.2 g/lb	3.6 g/lb
Aurofac 2A.....	Chlortetracycline hydrochloride	3.9 g/lb	3.6 g/lb
Megasul A9.....	Nitrophenide	25.0%	25.0%
	Arsanilic acid	9.0%	9.0%
Commercial Solvents Corp. Baciferm-PB-10 Antibiotic Feed Supplement.....	Procaine penicillin Bacitracin	none 9.7 g/lb	2.5 g/lb 7.5 g/lb
Baciferm-PB-10 Medicated Antibiotic Feed Supplement.....	Procaine penicillin Zinc bacitracin	2.5 g/lb 8.7 g/lb	2.5 g/lb 7.5 g/lb
Hess & Clark, Inc. Furazolidon 11%.....	Furazolidone	11.0%	11%
Furazolidone 11%.....	Furazolidone	11.6%	11%
Furazolidone 11%.....	Furazolidone	11.6%	11%
NFZ Mix 11.2%.....	Nitrofurazone	11.4%	11.2%
Merk & Co., Inc. Glycarbylamide 6%.....	Glycarbylamide	6.0%	6%
Nicarbazin 25%.....	Nicarbazin	25.0%	25%
Nicarbazin 25%.....	Nicarbazin	25.0%	25%
Sulfaquinoxaline 25%.....	Sulfaquinoxaline	25.0%	25%
Chas. Pfizer & Co., Inc. Timo Oxytetracycline.....	Oxytetracycline hydrochloride	10.8 g/lb	10. g/lb
Dr. Salsbury's Laboratories Dr. Salsbury's Unistat....	3-Nitro Dinitrobenzamide Acetyl-(para-nitrophenyl)- sulfanilamide	5.00% 25.5% 30.0%	5.00% 25.0% 30.0%
Whitmoyer Laboratories Arsanilic acid 20%....	Arsanilic acid	20.0%	20%

Feed Supplements, Oils, and Vitamin and Drug Mixtures

Manufacturer and Brand		Found	Guaranteed
American Cyanamid Co.			
Aurofac.....	{ Chlortetracycline hydrochloride	1.93	1.8
Aurofac.....	{ Vitamin B ₁₂	2.0	1.8
Fortafed 2-2-12-50.....	{ Chlortetracycline hydrochloride	2.2	1.8
	{ Vitamin B ₁₂	1.8	1.8
	{ Riboflavin.....	2350.	2000.
	{ Pantothenic acid	2333.	2000.
	{ Niacin	12000.	12000.
	{ Choline chloride	52000.	50000.
SF Mix No. 34.....	{ Riboflavin	2070.	2000.
	{ Pantothenic acid	2100.	2000.
	{ Niacin	2000.	2000.
The Borden Co.			
Borden's "300".....	{ Vitamin A	467600.	40000.
	{ Niacin	850.	800.
	{ Riboflavin	400.	400.
	{ Pantothenic acid	430.	400.
Borden's MF-FL Blend 30D.....	{ Vitamin B ₁₂	.6	.4
	{ Procaine penicillin	.023*	.05
	{ Vitamin B ₁₂	.20	.16
	{ Riboflavin.	50.5	45.
	{ Pantothenic acid	116.	80.
	{ Niacin	184.	140.
	{ Choline chloride	1141.	1000.
Borden's MF-FL Blend 30D.....	{ Betaine hydrochloride	5600.	5000.
	{ Procaine penicillin	.05	.05
	{ Vitamin B ₁₂	.20	.16
	{ Riboflavin.	47.	45.
	{ Pantothenic acid..	80.	80.
	{ Niacin	163.	140.
	{ Choline chloride	1120.	1000.
	{ Betaine chloride	6200.	5000.
Flaydry	{ Riboflavin	32.	27.
	{ Betaine chloride	4800.	4000.

*Deficient.

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand		Found	Guaranteed
Chemo-Puro Mfg. Corp.			
Chemo-Nutrient Premix.....	(Arsanilic acid Riboflavin Calcium pantothenate Niacin Choline chloride Vitamin B ₁₂ Niacin	2.0% 250 217. 2570. 14330. 1.0 98.0%	2.0% mg lb mg lb mg lb mg lb mg lb mg lb
Niacin 98%.....			98.0%
Commercial Solvents Corp.			
BY 21 Riboflavin Supplement.....	Riboflavin	4000.	3630. mg lb
BY 24 Riboflavin Supplement.....	Riboflavin	24000.	24000. mg lb
BY 353 Riboflavin Supplement.....	Riboflavin	16420.	16000. mg lb
BY Vitamin Feed Supplement 60.....	Riboflavin Pantothenic acid Niacin	2214. 4280. 9300.	2000. 3680. 9000. mg lb mg lb mg lb
BY Vitamin Feed Supplement 60.....	Choline chloride Riboflavin Pantothenic acid Niacin	12500. 2118. 3680. 9023. 10440. 320220.	2000. mg lb 3680. mg lb 9000. mg lb 8679. 275562. mg lb mg lb
Choline chloride	Choline chloride	26.0%	25.0%
CSC Choline Supplement 25.....	Choline chloride	28.0%	25.0%
CHS Choline Supplement 25.....	Procaine penicillin	2.0	2.
CSC No. 51 Antibiotic & Vitamin B ₁₂ Feed Supplement.....	Vitamin B ₁₂	3.0	3.
Proform-6 Vitamin B ₁₂ Supplement Oyster Shell Meal Carrier.....	Vitamin B ₁₂	7.1	6.
Proform-6 Vitamin B ₁₂ Supplement.....	Vitamin B ₁₂	6.	6.
Proform-6 Vitamin B ₁₂ Supplement Oyster Shell Meal Carrier.....	Vitamin B ₁₂	6.	6.
Proform-6 Vitamin B ₁₂ Supplement Oyster Shell Meal Carrier.....	Vitamin B ₁₂	6.4	6.
Proform-20 Vitamin B ₁₂ Supplement.....	Vitamin B ₁₂	25.1	20.
Proform-24 Vitamin B ₁₂ Supplement.....	Vitamin B ₁₂	24.	24.

•Deficient.

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand		Found	Guaranteed
Dawe's Laboratories, Inc. Dawe's Vitaelk	Vitamin A	13600.	14500.
	Riboflavin	36.	mg./lb. 31.75
	Pantothenic acid	80.	mg./lb. 66.0
	Niacin	283.	mg./lb. 255.
	Choline chloride	5112.	mg./lb. 3500.
	Vitamin B ₁₂	.155	mg./lb. 0.15
	Procaine penicillin	.035	g./lb. .03
	Vitamin A	16230.	14500.
	Riboflavin	37.	mg./lb. 31.75
	Pantothenic acid	90.	mg./lb. 66.0
Dawe's Vitamelk	Niacin	255.	mg./lb. 255.0
	Choline chloride	4500.	mg./lb. 3500.
	Vitamin B ₁₂	.17	mg./lb. 0.15
	Procaine penicillin	.038	g./lb. .03
	Vitamin A	14500.	14500.
	Riboflavin	36.	mg./lb. 31.75
	Pantothenic acid	48.	mg./lb. 66.
	Niacin	290.	mg./lb. 255.
	Choline chloride	4370.	mg./lb. 3500.
	Vitamin B ₁₂	.16	mg./lb. 0.15
Dawe's Vitamelk	Procaine penicillin	.038	g./lb. .03
	Vitamin A	19540.	14500.
	Riboflavin	31.75	mg./lb. 31.75
	Pantothenic acid	96.	mg./lb. 66.
	Niacin	264.	mg./lb. 255.
	Choline chloride	4400.	mg./lb. 3500.
	Vitamin B ₁₂	.20	mg./lb. .15
	Procaine penicillin	.023	g./lb. .03
	Vitamin A	15550.	14500.
	Riboflavin	39.	mg./lb. 31.75
Dawe's Vitamelk	Pantothenic acid	67.	mg./lb. 66.0
	Niacin	255.	mg./lb. 255.
	Choline chloride	3560.	mg./lb. 3500.
	Vitamin B ₁₂	.172	mg./lb. .15
	Procaine penicillin	.03	g./lb. .03
	Vitamin A	25880.	14500.
	Riboflavin	40.	mg./lb. 31.75
	d-Pantothenic acid	80.	mg./lb. 66.0
	Niacin	274.	mg./lb. 255.
	Choline chloride	4180.	mg./lb. 3500.
Dawe's Vitamelk	Vitamin B ₁₂	0.16	mg./lb. 0.15
	Procaine penicillin	.035	g./lb. .03

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand		Found	Guaranteed
Dawe's Laboratories, Inc.—(Continued) Dawe's Vitamelk, Ruminant.....	Vitamin A	58560.	units/lb
	Riboflavin	20.	mg/lb
	Pantothenic acid	22.	mg/lb
	Niacin	123.	mg/lb
	Choline chloride	3120.	mg/lb
	Vitamin A	57740.	units/lb
	Riboflavin	28.	mg/lb
	Pantothenic acid	12.0	mg/lb
	Niacin	106.	mg/lb
	Choline chloride	2440.	mg/lb
Dawe's Vitamelk (Swine Type).....	Riboflavin	51.0	mg/lb
	Choline chloride	5620.	mg/lb
	Niacin	418.	mg/lb
	Oxytetracycline hydrochloride	.03	g/lb
	Procaine penicillin	.15	g/lb
	Bacitracin	.06	g/lb
	Vitamin A	21850.	units/lb
	Pantothenic acid	127.	mg/lb
	Vitamin B ₁₂	0.31	mg/lb
	Vitamin A	8220.	units/g
Pedler Devold Oil Co. Devold Vitamin A Oil.....	Vitamin A	7430.	units/g
	Vitamin A		units/g
E. F. Drew & Co., Inc. Flex A Mix	Vitamin A		units/g
	Vitamin A		units/g
Gorton-Pew Fisheries Co., Ltd. Gorton's Al-Blend "Junior"	Vitamin A	44490.	units/lb
	Carotene	12.1	mg/lb
	Riboflavin	34.3	mg/lb
	Pantothenic acid	36.	mg/lb
	Niacin	251.	mg/lb
	Vitamin A	77630.	units/lb
	Carotene	9.5	mg/lb
	Riboflavin	40.0	mg/lb
	Niacin	309.	mg/lb
	Vitamin A	112140.	units/lb
Gorton's Laver Blend.....	Carotene	13.2	mg/lb
	Riboflavin	36.0	mg/lb
	Niacin	617.	mg/lb
	Vitamin A	89890.	units/lb
	Riboflavin	48.4	mg/lb
	Niacin	861.	mg/lb
	Calcium pantothenacet	76.	mg/lb
	Carotene	7.3	mg/lb
Gorton's Turkey Blend.....	Vitamin A	30000.	units/lb
	Carotene	9.	mg/lb
	Riboflavin	33.	mg/lb
	Pantothenic acid	34.	mg/lb
	Niacin	200.	mg/lb
	Vitamin A	50000.	units/lb
	Carotene	12.	mg/lb
	Riboflavin	14.	mg/lb
	Niacin	200.	mg/lb
	Vitamin A	100000.	units/lb
Gorton's Turkey Blend.....	Carotene	9.	mg/lb
	Riboflavin	28.	mg/lb
	Niacin	400.	mg/lb
	Vitamin A	70000.	units/lb
	Riboflavin	40.	mg/lb
	Niacin	500.	mg/lb
	Calcium pantothenacet	50.	mg/lb
	Carotene	6.	mg/lb

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand		Found	Guaranteed
Marine Products Co. Cod Liver Oil.....	Vitamin A	1520.	units/g 1500.
New England By-Products Corp. New Englander Vitalizer.....	Vitamin A	71500.	units/lb 50000.
The New Cork Quinine & Chemical Works, Inc. Riboflavin Mixture Feed Supplement.....	Riboflavin	4 1	g lb 4.
Nopco Chemical Co. Niacin 50%.....	Niacin	59.2	units lb 40000.
Premix No. 2—Layer.....	Vitamin A	460030.	mg lb 400.
	Riboflavin	417.	mg lb 2000.
	Niacin	420.	mg lb 400.
	Pantothenic acid	45	mg lb 4.
	Vitamin B ₁₂	3.97	mg lb 3.968
	Arsanilic acid	402930.	units lb 40000.
	Vitamin A	600.	mg lb 600.
	Riboflavin	4000.	mg lb 4000.
	Niacin	2100.	mg lb 2000.
	Pantothenic acid	44980.	mg lb 40000.
	Choline	2.5	mg lb 2.0
	Vitamin B ₁₂	.80	g lb .8
	Bacitracin	870170.	units lb 800000.
Turkey No. 4 Premix.....	Vitamin A	705.	mg lb 600.
	Riboflavin	9000.	mg lb 9000.
	Niacin	1050.	mg lb 1000.
	Pantothenic acid	64000.	mg lb 45000.
	Choline	1.25	mg lb 1.2
	Vitamin B ₁₂	.82	mg lb 0.8
	Procaine penicillin		g/lb
Chas. Pfizer & Co., Inc. TM 1 + 3 Oxytetracycline.....	Oxytetracycline hydrochloride	1.0	g/lb 1.
	Vitamin B ₁₂	3.0	mg/lb 3.
Stabilized Vitamins, Inc. Permady.....	Vitamin A	14350.	units/g 10000.
	Vitamin A	8470.	units/g 5000.
	Vitamin A	8200.	units/g 5000.

Feed Supplements, Oils, and Vitamin and Drug Mixtures—(Continued)

Manufacturer and Brand	Found	Guaranteed
Sterwin Chemicals, Inc. Niacin—Technical Type 177, 131 Vitamin Concentrate.	96.6% 27380. 12500. 6816. 47000. 16300. 21600.	mg/lb mg lb mg lb mg lb mg lb mg lb
132 Vitamin Concentrate		
Western Condensing Co. Peebles' M-N-C Peablies' M-N-C	36.4 25.6	mg lb mg lb
Whitmoyer Laboratories, Inc. Choline chloride 25' Cho-Meal.	27.4% 100. 110. 717. 5800. 126. 116. 750. 6250. 101. 111. 790. 5000. 148910.	mg lb mg lb mg lb mg lb mg lb mg lb mg lb mg lb mg lb mg lb mg lb mg lb units lb units lb
(Cho-Meal.)		
(Cho-Meal.)		
Flav-A-Dee	100. 100. 133. 710. 6500. 174800. 166. 116. 740. 6000. 3225. 5850. 1520.	mg lb mg lb mg lb mg lb mg lb units lb mg lb mg lb mg lb units g units g units g units g
Flav-A-Dee		
Vita Flak ... Vita Flak Whitmoyer Vitamin A N D Feeding Oil		

Alfalfa Meals

Manufacturer and Brand	Protein		Fiber		Carotene Milligrams per Pound	U.S.P. Units Vitamin A per Pound (Vitamin A Equivalent from Carotene)
	Found	Guar- anteed	Found	Guar- anteed		
Archer-Daniels-Midland Co. Small's 17%, Dehydrated Alfalfa Meal	18.7	17.	24.5	27.	49.2	82070
B & R Mills Dehydrated Alfalfa	17.5	17.	32.7*	27.	38.4	64010
Calyvert Milling Co. 17% Dehydrated Alfalfa Meal	16.3	17.	24.0	27.	42.4	70680
The A. B. Caple Co. 17% Capex Dehydrated Alfalfa Meal	17.4	17.	22.1	27.	69.9	116520
Erie Alfalfa Mills, Inc. Leary Erie Brand Dehydrated Dustless Alfalfa Meal	18.2	17.	27.0	27.	38.6	64350
Farm Bureau Coop. Assn., Inc. Dehydrated Alfalfa Meal with 1% Animal Fat	18.5	17.	23.9	27.	63.1	105190
Keystone Dehydrators Keystone Super Green Dehydrated Alfalfa Meal Keystone Super Green Dehydrated Alfalfa Meal	18.6 19.3	17. 17.	23.8 20.8	27. 27.	66.7 46.1	111190 76850
Miller Alfalfa Co. Dehydrated Alfalfa Meal Dehydrated Alfalfa Meal with 1% Animal Fat Dehydrated Alfalfa Meal with 1% Animal Fat	18.4 17.0 15.9	17. 17. 17.	18.6 23.2 26.4	27. 27. 27.	39.1 48.4 67.7	65180 80680 112850

* Fiber excessive

Alfalfa Meals--(Continued)

Manufacturer and Brand	Protein		Fiber		Carotene Milligrams per Pound	U.S.P. Units Vitamin A per Pound (Vitamin A Equivalent from Carotene)
	Found	Guar- anteed	Found	Guar- anteed		
National Alfalfa Dehydrating & Milling Co.						
Dehydrated Alfalfa Meal.....	21.6	20.	20.1	20	68.8	114690
Dehydrated Alfalfa Meal.....	19.3	17.	21.6	27.	68.6	114356
Dehydrated Alfalfa Meal.....	17.6	17.	25.4	27.	58.1	96850
Dehydrated Alfalfa Meal.....	18.8	17.	23.2	27.	81.7	136190
Jack Rabbit 177 Dehydrated Alfalfa Meal.....	18.1	17.	26.4	27.	71.5	119190
National H-N Dehydrated Alfalfa.....	18.7	18.	25.0	23	69.7	116190
Schoenck Farms, Inc.						
Schoenck's Dehydrated Alfalfa Leaf Meal.....	21.8	20.			98.6	164370
Schoenck's Leafy Alfalfa Pellets.....	20.8	17.	20.7	27	85.4	142370
Schoenck's 20% Super Green Alfalfa Meal.....	20.5	20.	22.2	27.	50.8	84650
Schoenck's 20% Super Green Alfalfa Meal.....	19.3	20.	23.6	27.	96.2	160870
Schoenck's Super Green Dehydrated Alfalfa Meal.....	18.8	17.	23.3	27.	69.7	116190
Schoenck's Super Green Dehydrated Alfalfa Meal.....	18.0	17.	27.0	27.	80.4	134030
Schoenck's 20% Super Green Alfalfa Meal.....	17.5**	20.	27.0	27.	71.7	119520
Schoenck's Super Green Dehydrated Alfalfa Meal.....	21.4	17.	18.9	27.	77.2	128600
Schoenck's Super Green Dehydrated Alfalfa Meal.....	20.0	20.	23.8	27.	85.8	142000
Schoenck's Super Green Dehydrated Alfalfa Meal.....	17.9	17.	26.4	27.	50.7	84570
Toledo Alfalfa Mills						
Pure Dehydrated Alfalfa Meal.....	15.0**	17.	27.7	27.	9.5	15840
Vita-A-Green Supreme Pure Dehydrated Alfalfa Meal.....	17.0	17.	22.4	27.	70.4	117360
Varnell Bros., Inc.						
Alfalfa Meal 177.....	17.0	17.	23.0	27.	83.9	139860

** Protein deficient

Mineral Mixtures

Manufacturer and Brand	Mineral	Found	Guaranteed
Acton, Inc. Sea-Coll.....	{ Phosphorus Calcium Fluorine*	9.1 18.2 1.46	9.0 20.0 1.50
H. J. Baker & Bros. Cura-Phos.....	Phosphorus	14.0	14.0
Eastman Chemical Products Co. Tecmangan.....	Manganese	28.0	27.3
International Minerals & Chemical Corp. Beaded Dicalcium Phosphate.....	{ Phosphorus Calcium	18.7 22.3	18.5 21.0
Limestone Products Corp. Calcite Flour.....	{ Calcium Magnesium	35.1 1.5	33. 2.6 *
Lime Crest Brand Delamix Trace Minerals.....	{ Manganese Iron Zinc Copper Iodine Cobalt Calcium	6.0 2.0 2.2 0.2 .13 .021 29.1	6.0 2.0 2.0 0.2 .12 .02 26.5
Whitmoyer Laboratories, Inc. Tra-Min No. 1.....	{ Manganese Iodine Copper Cobalt Iron Calcium Zinc	6.00 .13 .21 .042 2.2 32.3 .38	6.00 .12 .20 .04 2.5 26.0 .35
Young's Vitamin & Mineral Products Co. ¹ Vit-Y-Min with Active Yeast Culture for Cattle, Sheep & Goats.....	{ Calcium Phosphorus Iodine	15.4 12.0 .03	14. - 15. 12. .02
² Vit-Y-Min for Cattle.....	{ Calcium Phosphorus Iodine	22.3 17.3 .03	22. - 23. 17. .02
³ Vit-Y-Min for Hogs.....	{ Calcium Phosphorus Iodine	22.0 16.0 .04	22. - 23. 16.0 .03
⁴ Vit-Y-Min for Horses.....	{ Calcium Phosphorus Iodine	17.1 12.3 .03	15. - 16. 12. .03
⁵ Young's Rumen Organism Mix.....	{ Calcium Phosphorus Iodine	18.1 13.1 .03	18. - 19. 13. .02

* Maximum guarantee

¹ Vitamin A guaranteed 30000 units/lb; Found 31850 units/lb² Vitamin A guaranteed 30000 units/lb; Found 40780 units/lb³ Vitamin A guaranteed 30000 units/lb; Found 30160 units/lb⁴ Vitamin A guaranteed 30000 units/lb; Found 33970 units/lb⁵ Vitamin A guaranteed 22000 units/lb; Found 30950 units/lb

Oat Products

Manufacturer and Brand	Protein		Fat		Fiber		Results of Microscopic Examination
	Found	Guar-anteed	Found	Guar-anteed	Found	Guar-anteed	
E. W. Bailey & Co., Inc. Bailey's Cimped Oats	12.0	12.	—	4.	—	12.	As represented.
Borden Grain Co. Borden's Ground Oats Borden's Ground Oats	12.2 13.1	— —	— —	— —	11.7 11.3	— —	As represented. As represented.
J. L. Dunnell & Son Ground Oats	11.4	—	—	—	9.9	—	As represented.
Flambeau Milling Co. White Oats	10.8	11.	—	3.	12.6	13.	Appears to be mixed grains of oats, wheat, barley, corn, plus weed seeds and oat hulls.
General Mills, Inc. Purity Pulverized White Oats Purity Pulverized White Oats Purity Medium Ground White Oats Purity Medium Ground White Oats Purity Coarse Ground White Oats	12.3 13.5 13.0 12.6 13.1	12. 12. 12. 12. 12.	4.7 5.0 — — 4.6	4.5 4.5 4.5 4.5 4.5	13.6 11.4 13.0 12.9 12.6	13. 13. 13. 13. 13.	As represented. As represented. As represented. As represented. As represented.
Milton Milling Co., Ltd. Ground Oat Hulls	3.6	.4	—	.5	31.0	33.	As represented
Ogilvie Flour Mills Co., Ltd. Pulverized Mixed Feed Oats	11.2	10.	—	3.	15.5	14.	Mixed. Sample appears to be grain screenings.
Quaker Oats of Canada, Ltd. Peterborough Oat Mill By-Products Peterborough Oat Mill By-Products	3.4 3.7	2.5 2.5	— —	1. 1.	31.6 30.9	32. 32.	As represented. As represented.

Oat Products—(Continued)

Manufacturer and Brand	Protein		Fat		Fiber		Results of Microscopic Examination
	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	
Jas. Richardson & Sons, Ltd. Ground Oats,	10.1	12	—	3	9.1	14.5	Deficient in protein. This product is ground mixed grains consisting of about 60% oats, 30% wheat, 5% barley.
Seale Grain Co. Cracked Puffs, Quality Pulverized Whole Oats,	11.5	11	4.1	4	13.5	13	Mislabeled. Should be labeled either as "grain screenings" or as "pulverized mixed grain", seeds, hulls.
Pulverized Whole Oats,	11.1	11	4.4	4	13.9	13	Mislabeled. Should be labeled either as "grain screenings" or "pulverized mixed grain", seeds, hulls.
Pulverized Whole Oats,	11.0	11	4.1	4	14.4	13	Mislabeled. Should be labeled either as "grain screenings" or "pulverized mixed grain", seeds, hulls.
Wirthmore Stores Ground Oats,	11.2	—	—	—	10.4	—	As represented.
Ground Oats,	11.0	—	—	—	9.1	—	As represented.
Ground Oats,	11.0	—	—	—	10.9	—	As represented.
Ground Oats,	11.1	—	—	—	—	—	As represented.

Directory of Manufacturers who Registered Feeds for Sale in Massachusetts in 1958

- Abbott Laboratories, 1400 Sheridan Rd., N. Chicago, Ill.
 Acme-Evans Co., Inc., 902 West Washington Ave., Indianapolis 9, Ind.
 Acton, Inc., Box 368, Dunnellon, Florida
 L. P. Adams Co., 484 Housatonic St., Dalton, Mass.
 Ajax Dog Food Co., 49 Pine St., Dedham, Mass.
 Albers Milling Co., 5045 Wilshire Blvd., Los Angeles 36, Cal.
 Allied Chemical & Dye Corp., Nitrogen Div., P. O. Drawer 6, Hopewell, Va.
 Allied Mills, Inc., Chicago, Ill.
 American Crabmeat Co., Inc., P. O. Box 250, Boston 1, Mass.
 American Crystal Sugar Co., 600 Boston Bldg., Denver, Col.
 American Cyanamid Co., Fine Chemicals Div., P. O. Box 672, Princeton, N. J.
 American Maize-Products Co., 250 Park Ave., New York 17, N. Y.
 Anheuser-Busch, Inc., 721 Pestalozzi St., St. Louis 18, Mo.
 Archer-Daniels-Midland Co., Linseed Oil Meal Dept., P. P. Box 839, Minneapolis 2, Minn.
 Archer-Daniels-Midland Co., Soybean Oil Meal Dept., 700 Investors Bldg., Minneapolis, Minn.
 Atlantic Processing Co., P. O. Drawer 248, Amagansett, N. Y.
- E. R. Bacon Grain, 177 Milk St., Boston, Mass.
 E. W. Bailey & Co., Inc., Montpelier, Vt.
 H. J. Baker & Bro., 600 Fifth Ave., New York 20, N. Y.
 Barber & Bennett, Inc., Arch & Church Sts., Albany, N. Y.
 Battle Creek Dog Food Co., 60 East State St., Battle Creek, Mich.
 Beacon Milling Co., Inc., Cayuga, N. Y.
 Berkman Grain Co., North Franklin, Conn.
 Best Dog Food Co., 447 Timpson Place, Bronx 55, N. Y.
 Best Feeds & Farm Supplies, Inc., 271 W. Wheeling St., Washington, Pa.
 Best Foods, Inc., 1442 Marine Trust Bldg., Buffalo, N. Y.
 Blatchford Calf Meal Co., 2-26 East Madison St., Waukegan, Ill.
 Bordon Co., Special Products Div., 350 Madison Ave., New York 17, N. Y.
 Bordon Grain Co., 700 West Water St., Taunton, Mass.
 Boston Molasses Co., 920 East 1st St., South Boston 27, Mass.
 C. W. Brister & Son, 195-209 North St., Auburn, N. Y.
 Brown-Forman Distillers Corp., 1908 Howard St., Louisville, Ky.
 Jas. P. Brown Co., Inc., 273 Franklin St., Worcester, Mass.
- Canada Linseed Oil Mills, Ltd., 2215 Notre Dame St., East, Montreal 24, Que., Canada
 The A. B. Caple Co., Station A, Box 27, Toledo 5, Ohio
 Cargill, Inc., 200 Grain Exchange Bldg., Minneapolis 15, Minn.
 Carling Brewing Co., 143 Worcester St., Natick, Mass.
 Chef Pet Foods, Inc., Box 659, Delavan, Wis.
 Citrus Feed Co., P. O. Box 513, Lakeland, Florida
 Clinton Corn Processing Co., Clinton, Iowa
 Clyde Milling Corp., Clyde, N. Y.
 Colby Cooperative Starch Co., Box 162, Caribou, Maine
 Commercial Solvents Corp., 1331 South First St., Terre Haute, Ind.
 Community Service, Inc., Canaan, Conn.
 Connecticut Bi-Products, Hop River Road, Columbia, Conn.
 Consolidated Rendering Co., 178 Atlantic Ave., Boston 10, Mass.
 Continental Distilling Corp., 1429 Walnut St., Philadelphia, Pa.
 Corn Products Refining Co., 17 Battery Pl., New York 4, N. Y.
 Corn Products Sales Co., 17 Battery Place, New York 4, N. Y.
 Courcy & Sons Grain Co., Taunton, Mass.
 Cover Grain & Feed Co., 150 Middle St., Lowell, Mass.
- Dawe's Laboratories, Inc., 4800 S. Richmond St., Chicago 32, Ill.
 Dawnwood Farms, Smithfield Road, Amenia, N. Y.
 Dean & Lee, Chemung St., Horseheads, N. Y.
 Decatur Elevator Co., 518 E. Gault St., Decatur, Ill.
 Decatur Milling Co., Inc., 717 North Union St., Decatur, Ill.
 Dehydrating Process Co., 209 New Boston St., Woburn, Mass.

- Delaware Mills, Inc., Front St., Deposit, N. Y.
 Delphos Grain & Soya Products Co., South Jefferson St., Delphos, Ohio
 Peder Devold Oil Co., 417-5th Ave., New York, N. Y.
 Dewhurst Grain Store, Southwick, Mass.
 F. Diehl & Son, Inc., 180 Linden St., Wellesley 81, Mass.
 Dietrich & Gambrill, Inc., South Carroll St., Frederick, Md.
 Distillers Corp., Ltd., 225 LaFleur St., Lasalle, Quebec, Ca.
 Dixon Smith Millen, 127 West St., Elmwood, Mass.
 Domestic Concentrates, Inc., 25 Broad St., New York 4, N. Y.
 Dow Brewery Ltd., 990 Notre Dame St., W. Montreal, Quebec, Canada
 John C. Dow Co., 40-44 Prospect St., Gloucester, Mass.
 Doyle Packing Co., Inc., of N. J., 165 Branchport Ave., Long Branch, N. J.
 E. F. Drew & Co., Inc., 15 East 26th St., New York City 10, N. Y.
 J. L. Dunnell & Son, Bernardston, Mass.
 E. I. du Pont de Nemours & Co., Wilmington, Del.
 Eastern States Farmers' Exchange, Inc., 26 Central St., West Springfield, Mass.
 Eastman Chemical Products, Inc., Kingsport, Tenn.
 Eckhart Milling Co., 1300 W. Carroll Ave., Chicago, Ill.
 8 in 1 Pet Products, Inc., 42-20 22nd St., Long Island City, N. Y.
 Elmore Milling Co., Inc., 52 Main St., Oneonta, N. Y.
 Erie Alfalfa Mills, Inc., P. O. Box 848, Erie, Mich.
 John W. Eshelman & Sons, 244 North Queen St., Lancaster, Penn.
 Essex County Cooperative Farming Association, 144 South Main St., Topsfield, Mass.
 Evans Milling Co., Inc., 1730 West Michigan St., Indianapolis, Ind.
 Farm Bureau Association, 155 Lexington St., Waltham 54, Mass.
 Farm Bureau Cooperative Association, Inc., 245 North High St., Columbus 16, Ohio
 Farmers Feed Co., 375 Johnson Ave., Brooklyn 6, N. Y.
 Ferneau Grain Co., Gibson Bldg., Blanchester, Ohio
 Florida Citrus Cannors Cooperative, P. O. Box 1111, Lake Wales, Florida
 Flory Milling Co., Inc., North Main St., Bangor, Penn.
 FMS, Inc., Thomasville, Penn.
 Fred A. Fountain, 355 Tremont St., Taunton, Mass.
 French Sardine Co., 582 Tuna St., Terminal Island, Cal.
 General Foods Corp., 250 North St., White Plains, N. Y.
 General Foods Corp., Gaines Div., 180 South Dearborn Ave., Kankakee, Ill.
 General Foods Corp., Post Cereals Div., 275 Cliff St., Battle Creek, Mich.
 General Mills, Inc., 400 Second Ave., South, Minneapolis, Minn.
 General Mills, Inc., Larowe Region, 15800 W. McNichols Rd., Detroit 35, Mich.
 Gloucester By-Products, Inc., State Fish Pier, Gloucester, Mass.
 Roy Goff & Co., Inc., 240 Fairfield Ave., Bridgeport, Conn.
 Goldenrod Oil Meal Sales Co., 727 Beale Ave., Memphis 1, Tenn.
 Gorton Pew Fisheries Co., Ltd., 327 Main St., Gloucester, Mass.
 Grandin Brothers Corp., 1029 Allen St. Ext., Jamestown, N. Y.
 Grand Island Citrus Corp., P. O. Box T, Umatilla, Fla.
 Great Atlantic & Pacific Tea Co., 817-512 Nicollet Bldg., Minneapolis 2, Minn.
 Haffenreffer & Co., Inc., 30 Germania St., Boston 30., Mass.
 Hales & Hunter Co., 141 West Jackson Blvd., Chicago 4, Ill.
 D. Harbeck & Sons, 405 Earle St., New Bedford, Mass.
 Harper Feed Mills, Inc., 271 West Wheeling St., Washington, Penn.
 Hartz Mountain Products Corp., 36 Cooper Square, New York 3, N. Y.
 Hayward, Inc., Oak Harbor, Ohio
 Hess & Clark, Inc., 7th & Orange Sts., Ashland, Ohio
 Heterochemical Corp., 111 E. Hawthorne Ave., Valley Stream, N. Y.
 Hi-Life Packing Co., 431 S. Dearborn St., Chicago 5, Ill.
 H. P. Hood & Sons, Inc., 500 Rutherford Ave., Boston 29, Mass.
 H. P. Hood & Sons, Dunedin, Florida
 E. C. & W. L. Hopkins, Inc., Greenfield, N. H.
 House of Houston, Inc., 4135 Laguna St., Coral Gables, Florida
 Hubinger Co., 601 Main St., Koekuk, Iowa
 Hygrade Food Products Corp., Kennel Food Supply Div., 63 Mill Hill Terr., Fairfield, Conn

Illinois Cereal Mills, Inc., South Jefferson Ave., Paris, Ill.
 Independent Tallow Co., 39 Cedar St., Woburn, Mass.
 Industrial Molasses Corp., 3033 Excelsior Blvd., Minneapolis 16, Minn.
 International Milling Co., 1200 Investors Bldg., Minneapolis, Minn.
 International Minerals & Chemical Corp., 20 North Wacker Drive, Chicago 6, Ill.
 International Salt Co., Inc., P. O. Drawer 511, Scranton 2, Penn.
 International Stock Food Corp., 59 Main St., Delhi, N. Y.

Jaquith & Co., Inc., 305 Main St., Woburn, Mass.

Kellogg Sales Co., Feed Dept., 235 Porter St., Battle Creek, Mich.
 Spencer Kellogg & Sons, Inc., 98 Delaware Ave., Buffalo 2, N. Y.
 Keystone Dehydrators, Box 204, Nazareth, Penn.
 H. C. Knoke & Co., 5728 West Roosevelt Road, Chicago 50, Ill.
 Kraft Foods Co., 99 Park Ave., New York 16, N. Y.
 Chas. A. Krause Milling Co., 404 East State St., Milwaukee 1, Wis.
 Kronick's Coal & Grain Co., 43 Pleasant St., Adams, Mass.
 Kuder Pulp Sales Co., Lake Alfred, Florida

Lake States Yeast Corp., 603 W. Davenport St., Rhinelander, Wis.
 Lauhoff Grain Co., 321 E. North St., Danville, Ill.
 Lauhoff Soya Co., P. O. Box 571, Danville, Ill.
 Libby, McNeill & Libby, 4134 South Packers Ave., Chicago 9, Ill.
 Libner Grain Co., Inc., 25 Commerce St., Norwalk, Conn.
 Limestone Products Corp. of America, 122 Main St., Newton, N. J.
 L. B. Lovitt & Co., 314 Cotton Exchange Bldg., Memphis, Tenn.

Mak Mor Corp., P. O. Box 123, Clinton, Mass.
 Mansfield Milling Co., Mansfield, Mass.
 Maritime Milling Co., Inc., 100 South Elmwood Ave., Buffalo 2, N. Y.
 Marvin Grain & Hardware Co., 31 Cove Road, South Dartmouth, Mass.
 McCabe Grain Co., Ltd., 409 Grain Exchange Bldg., Winnipeg, Manitoba, Canada
 McMillen Feed Mills, Div. of Central Soya Co., Inc., 300 Ft. Wayne Bank Bldg., Fort Wayne 2, Indiana.

The Mennel Milling Co., 1712 Toledo Trust Bldg., Toledo 4, Ohio
 Merck & Co., Inc., Rahway, N. J.
 Merrimack Farmers' Exchange, Inc., Low Ave., Concord, N. H.
 Miller Alfalfa Co., Jackson & Gorman Sts., Defiance, Ohio
 Miner-Hillard Milling Co., 826 Second National Bank Bldg., Wilkes-Barre, Penn.
 Minute Maid Corp., Florida Specialty Products Div., P. O. Box 720, Leesburg, Florida
 Geo. Q. Moon & Co., Inc., 201 Chenango St., Binghamton, N. Y.
 Jas. F. Morse & Co., 11 Horace St., Somerville 43, Mass.
 Morton Salt Co., 120 South LaSalle St., Chicago 3, Ill.
 Mowat, Wilson & Co., 18675 James Couzens Highway, Detroit 35, Mich.
 Myzon, Inc., 3120 W. 47th St., Chicago 32, Ill.

Nappanee Milling Co., Nappanee, Ind.
 National Alfalfa Dehydrating & Milling Co., 101 South 4th St., Lamar, Col.
 National Biscuit Co., 449 West 14th St., New York 14, N. Y.
 National Biscuit Co., Toledo Mill, P. O. Box 1528 Central St., Toledo 3, Ohio
 National Distillers and Chemical Corp., 99 Park Ave., New York 16, N. Y.
 National Vitamin Products Co., 3401 Hiawatha Ave., South, Minneapolis 6, Minn.
 Nopco Chemical Co., 1st & Essex Sts., Harrison, N. J.
 Northern Ohio Sugar Co., Special Products Div., 1530 Sixteenth St., Denver, Col.

Ogde Grain Co., Wurz Ave., Utica, N. Y.
 Old Mother Hubbard Dog Food Co., Inc., 40-44 Prospect St., Gloucester, Mass.
 Orleans Dog Candy Co., 431 South Dearborn St., Chicago 5, Ill.
 Owensboro Grain Co., 102 Lewis St., Owensboro, Ky.

Pabst Brewing Co., Merchandise Mart, Chicago 54, Ill.
Park & Pollard Co., Inc., 100 South Elmwood Ave., Buffalo 2, N. Y.
George H. Parker Grain Co., 56 Water St., Danvers, Mass.
Patent Cereals Co., 13-55 Bradford St., Geneva, N. Y.
Penick & Ford Ltd., Inc., Cedar Rapids, Iowa
Chas. Pfizer & Co., Inc., 11 Bartlett St., Brooklyn 6, N. Y.
Philadelphia Seed Co., Inc., P. O. Box 934, Philadelphia 5, Penn.
Pillsbury Mills, Inc., Minneapolis 2, Minn.
Pup Corn Brands, 690 Osgood Ave., New Britain, Conn.

Quaker Oats Co., Merchandise Mart Plaza, Chicago 54, Ill.

Ralston Purina Co., 835 South Eighth St., St. Louis 2, Mo.
John Reardon & Sons Div. of Wilson & Co., Inc., 51 Waverly St., Cambridge, Mass.
Redbird Farm, Inc., Wrentham, Mass.
Jas. Richardson & Sons, Ltd., 2 King St., East, Toronto, Ontario, Canada
D. F. Riley, P. O. Box A, Hatfield., Mass.
Rudhard Products, Inc., 248 Michigan Ave., Buffalo 3, N. Y.
Russell-Miller Milling Co., 860 Grain Exchange, Minneapolis 15, Minn.

Salada, Shirriff-Horsey Inc., Plant City, Florida
Schenley Distillers, Inc., 350 Fifth Ave., New York 1, N. Y.
Schoeneck Farms, Inc., R.D. No. 3, Nazareth, Penn.
Jos. F. Seagram & Sons, Inc., Box 240, Louisville, Ky.
Sherwin-Williams Co., 101 Prospect Ave., N.W., Cleveland, Ohio
Allen V. Smith, Inc., Marcellus Falls, N. Y.
Harold E. Smith Co., E. High St., Avon, Mass.
Southern Fruit Distributors, Inc., P. O. Box 671, Orlando, Florida
E. R. Squibb & Sons, 460 Park Ave., New York 22, N. Y.
Stabilized Vitamins, Inc., 57-59 Commerce St., Brooklyn 31, N. Y.
A. E. Staley Manufacturing Co., Eldorado & 22nd Sts., Decatur, Ill.
Standard Brands, Inc., Special Products Div., 625 Madison Ave., New York 22, N. Y.
Standard Brands, Inc., Pet Food Div., 625 Madison Ave., New York 22, N. Y.
F. W. Stock & Sons, Inc., E. Beacon St., Hillsdale, Mich.
Sturdy Dog Food Co., 2103 West Genesee St., Syracuse, N. Y.
Suni-Citrus Products Co., Cocke & Co., Agents, 208 William-Oliver Bldg., Atlanta, Ga.
Sunshine Biscuits, Inc., 29-10 Thompson Ave., Long Island City, N. Y.
Sunshine Biscuits, Inc., Milling Division, Mechanic St., Grafton, Ohio
Swift & Co., P. O. Box 110, Fostoria, Ohio
Swift & Co., Pard Dept., Union Stock Yards, Chicago 9, Ill.

Taft Bros., Uxbridge, Mass.
Toledo Alfalfa Mills, Stadium Rd., & Rt. No. 6, Oregon, Ohio
Tropicana Product-, Inc., P. O. Box 338, Bradenton, Florida
Trudeau & Bros., Ltd., Chemin Laroque Rd., Valleyfield, Quebec, Canada

Union Sales Corp., Columbus, Ind.
Union Starch & Refining Co., 301 Washington St., Columbus, Ind.
United Co-Operative Farmers, Inc., 339 Broad St., Fitchburg, Mass.
U. S. Industrial Chemicals Co., Div. of National Distillers Products Corp., 99 Park Ave., New York 16, N. Y.
Unity Feeds, Inc., 177 Milk St., Boston, Mass.
George Urban Milling Co., 332 North Oak St., Buffalo 3, N. Y.

Ventura Grain Co., 7 Purchase St., Taunton, Mass.

C. P. Washburn Co., Cambridge St., Middleboro, Mass.
H. K. Webster Co., 24 West St., Lawrence, Mass.
Western Condensing Co., Box 739, Appleton, Wis.

West-Nesbitt, Inc., P. O. Box 293, Oneonta, N. Y.
Whitmoyer Laboratories, Inc., 19 N. Railroad St., Myerstown, Pa.
Wilson & Co., Inc., 4200 S. Marshfield Ave., Chicago 9, Ill.
Wilson's Corn Products, Inc., E. Fourth St., Rochester, Ind.
Winter Garden Citrus Products Cooperative, P. O. Box 399, Winter Garden, Fla.
Wirthmore Feed Co., Concord, N. H.
Wirthmore Feeds, Inc., 343 Winter St., Waltham 54, Mass.
Wirthmore Grain Co., 15 Harrison Ave., Taunton, Mass.

Yieldmore Feeds, Inc., 101 S. Downing St., Piqua, Ohio
Young's Vitamin & Mineral Products Co., Roaring Spring, Pa.



Inspection of Commercial Fertilizers and Agricultural Lime Products

BY

Fertilizer Control Service Staff

Massachusetts Agricultural Experiment Station



This is the eighty-sixth report of the Massachusetts Fertilizer Control
made in accordance with Chapter 94, Sections 250 to 261, inclusive, of
Massachusetts General Laws 1920, as amended by Chapter 67, Acts of 1932.

INSPECTION OF COMMERCIAL FERTILIZERS AND AGRICULTURAL LIME PRODUCTS FOR THE SEASON OF 1959

BY FERTILIZER CONTROL SERVICE STAFF

John W. Kuzmeski, *Research Professor, Official Chemist*
Albert F. Spelman, *Associate Research Professor*
C. Tyson Smith, *Associate Research Professor, Microscopist*
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Joseph Conklin, *Inspector*
Edward F. Vlach, *Technical Assistant*
Paul Korpita, *Laboratory Assistant*
Doris A. Kennedy, *Senior Clerk and Stenographer*

PERTINENT FACTS RELATING TO MASSACHUSETTS FERTILIZER LAW

Commercial Fertilizers

Registration is required annually on January 1.
Registration fee is \$8 for each element: nitrogen, phosphoric acid, potash, and magnesia.
Label must show:
Net weight of fertilizer
Name, brand or trade mark, and grade
Name and address of manufacturer
Guaranteed analysis: nitrogen, available phosphoric acid, water soluble potash. A guarantee of total phosphoric acid may be used instead of available phosphoric acid for bone, untreated phosphate rock, tankage, dried and pulverized manures, ground seeds, and wood ashes.

Labeling reports are required semiannually, on January 1 and July 1.

Lime Products

Registration is required annually on January 1.
Registration fee: \$12 for each brand.
Label must show:
Net weight of product
Name, brand or trade mark, and form of lime
Name and address of manufacturer
Guaranteed analysis: calcium oxide, magnesium oxide, carbonates of calcium and magnesium, or calcium sulfate (in gypsum or land plaster)

Make checks payable to Massachusetts Agricultural Experiment Station and send correspondence to

JOHN W. KUZMESKI
Massachusetts Agricultural Experiment Station
Amherst, Mass.

FERTILIZER TONNAGE

Tonnage of Fertilizer Sold in Massachusetts

	1957		1958	
	Jan 1 to July 1	July 1 to Dec. 31	Jan. 1 to July 1	July 1 to Dec. 31
Mixed fertilizers.....	55312	12239	56686	13199
Fertilizer chemicals & materials unmixed.....	10658	5468	10449	4162
Pulverized animal manures.....	1322	480	1658	424
Totals.....	67292	18187	68793	17785

Tonnage of Mixed Fertilizers, January 1 to December 31, 1958

Tonnage				Tonnage			
Grade*	Jan. 1 to July 1	July 1 to Dec. 31	Brands	Grade*	Jan. 1 to July 1	July 1 to Dec. 31	Brands
5-10-10	13021	2102	14	10-5-5	1252	370	5
10-10-10	10259	2758	9	8-12-12	1240	217	5
8-16-16	4521	1486	9	6-3-6	1050	21	5
5-8-7	3216	269	7	6-12-12	977	—	3
6-10-4	2872	316	4	01 5-30	960	746	7
7-7-7	2593	451	9	10-6-4	816	279	11
8-6-2	2392	473	9	4-12-16	419	—	4
5-10-5	2141	373	13	0-20-20	237	124	6
8-6-4	1894	768	4	Miscellaneous	6826	2446	—
Totals.....					56686	13199	124

*The grade represents the plant food guarantee and is expressed in the order of nitrogen, available phosphoric acid, and potash.

Tonnage of Unmixed Materials, January 1 to December 31, 1958

Material	Tonnage		Brands
	Jan. 1 to July 1	July 1 to Dec. 31	
Process tankage and activated sewage.....	4359	1530	15
Superphosphate.....	1786	948	9
Pulverized animal manures.....	1658	424	14
Cottonseed meal.....	815	—	3
Ammonium nitrate.....	808	530	6
Bone Meal.....	536	258	14
Nitrate of soda.....	503	203	8
Muriate of potash.....	387	160	8
Sulfate of ammonia.....	336	66	10
Castor pomace.....	325	87	3
Cyanamid.....	255	42	8
Urea.....	105	58	8
Urea formaldehyde.....	46	46	4
Miscellaneous.....	188	234	—
Totals.....	12107	4586	110

Total Tonnage of Fertilizers Sold During the Past Ten Years

1949.....	81881	1954.....	86216
1950.....	82135	1955.....	85024
1951.....	82201	1956.....	80356
1952.....	86429	1957.....	85479
1953.....	84959	1958.....	80578

MIXED FERTILIZERS

Deficiency Statistics for Mixed Fertilizers

Manufacturer	Number of Samples		Number of Tests				
	Analyzed	With No Deficiencies	Totals	Between $\frac{1}{4}$ and $\frac{1}{2}$ Per Cent Below Guarantee	Between $\frac{1}{2}$ and $\frac{3}{4}$ Per Cent Below Guarantee	More than $\frac{3}{4}$ Per Cent Below Guarantee	
Agricultural Products Co.....	4	2	12	0	0	3	
Alaska Fertilizer Co.	1	1	3	0	0	0	
American Agricultural Chemical Co....	56	46	167	0	5	5	
American Bulb Co.....	1	0	3	0	1	0	
Armour Agricultural Chemical Co.....	20	18	59	1	1	1	
Atlas Fish Fertilizer Co.....	2	2	4	0	0	0	
F. A. Bartlett Tree Expert Co.....	1	1	3	0	0	0	
Jos. Breck & Sons Corp.....	5	3	16	0	1	1	
California Spray Chemical Co.....	3	3	9	0	0	0	
Carbola Chemical Co., Inc.....	1	1	3	0	0	0	
Chesnicks Landscape Service.....	2	2	6	0	0	0	
Clinton Nurseries.....	2	2	6	0	0	0	
Comstock, Ferre & Co.....	1	1	3	0	0	0	
Consolidated Rendering Co.....	67	55	200	1	5	8	
Davison Chemical Co.....	5	3	14	0	1	1	
Doggett & Pfeil Co.....	3	3	8	0	0	0	
Doughton Seed Co.....	1	1	3	0	0	0	
E. I. duPont de Nemours & Co.....	1	1	3	0	0	0	
Eastern States Farmers' Ex., Inc.....	30	25	112	1	4	0	
Edgewood Farms, Inc.....	1	1	3	0	0	0	
The Espoma Co.....	1	1	3	0	0	0	
Essex County Coop. Farming Assn.....	4	4	13	0	0	0	
Faesy & Besthoff, Inc.....	6	5	18	0	0	1	
G. D. Garden Products Co.....	1	0	3	1	0	1	
Farm Bureau Assn.....	5	5	16	0	0	0	
Forward House Div.....	1	1	3	0	0	0	
Frost & Higgins.....	1	1	3	0	0	0	
Garfield Williamson, Inc.....	2	2	6	0	0	0	
Glorion Div.....	1	1	3	0	0	0	
Goulard & Olena.....	9	5	27	1	0	3	
A. H. Hoffman, Inc.....	3	3	9	0	0	0	
Hubbard-Hall Co.....	39	35	121	0	3	1	
Hydroponic Chemical Co.....	1	1	3	0	0	0	
Hy-Trous Corp.....	1	1	3	0	0	0	
International Mineral & Chemical Co.....	33	33	113	0	0	0	
K. & K. Fertilizer Service.....	5	5	16	0	0	0	
Lee Patten Seed Co.....	1	1	3	0	0	0	
Lexington Gardens, Inc.....	5	5	15	0	0	0	
John D. Lyon, Inc.....	2	2	6	0	0	0	
Mass. Nurserymen's Assn.....	1	0	3	0	0	1	
Old Fox Agricultural Sales, Inc.....	21	20	71	0	0	1	
Parks-Barnes, Inc.....	2	2	6	0	0	0	
Penn Co.....	1	1	3	0	0	0	
Plantabbs Corp.....	1	1	3	0	0	0	
Plant Products Co.....	1	1	3	0	0	0	
Ra-Pid-Gro Corp.....	2	0	3	0	0	2	
Ross Daniels, Inc.....	2	2	6	0	0	0	
J. M. Scott & Sons, Inc.....	1	1	3	0	0	0	
Sears, Roebuck & Co.....	9	7	27	0	1	1	
Stern's Nurseries.....	2	2	6	0	0	0	
Stim-U-Plant Laboratories, Inc.....	3	3	9	0	0	0	
Swift & Co.....	8	6	24	0	0	2	
Swiss Farms, Inc.....	1	1	3	0	0	0	
Taft Oil Co.....	1	1	3	0	0	0	
Universal Chemical Co.....	4	3	12	0	0	2	
Vinslow Nurseries, Inc.....	2	2	6	0	0	0	
F. H. Woodruff & Sons, Inc.....	2	2	6	0	0	0	
Totals.....	392	337	1218	5	22	34	

EXPLANATION OF TABLE OF ANALYSES

Guarantee. The plant food guarantee or the grade of each fertilizer is made a part of the trade name under the heading, 'Name of Manufacturer and Brand,' and is expressed as nitrogen, available phosphoric acid, and water soluble potash in that order.

Mixtures Substantially Complying with the Guarantee. In addition to those fertilizers that meet their guarantees in every respect, this table includes also a list of those mixtures that have one or more elements below the guaranteed percentage but have a shortage of less than \$1 per ton.

This table, in addition to the data mentioned in the next paragraph, contains only results of analytical tests pertaining to the average amount of water insoluble nitrogen present in some brands, since this information is of value to tobacco growers and other users of fertilizers containing a high percentage of this form of nitrogen.

Potash Forms. Tests for chlorine are made only on tobacco mixtures and on those fertilizers that carry a guarantee of potash in forms other than muriate. When the amount of chlorine present in any brand exceeds the tolerance allowed for that brand, this fact is indicated by a footnote.

Mixtures Showing Deficiencies Exceeding Tolerances

Manufacturer and Brand	Nitrogen Found		Available Phosphoric Acid Found	Water Soluble Potash (K ₂ O) Found	Approximate Commercial Shortage per Ton
	Water Insoluble Organic	Total			
Agricultural Products Co.					
Apco All Purpose Plant Food 5-10-5		9.64	7.35	3.00	(1)
Apco Rose Food 5-12-4.....	1.00	10.84	5.69	4.86	(1)
American Agricultural Chemical Co.					
Agrico Phosphate & Potash 0-20-20	—	—	21.00	17.44	\$2.56
Agrico Phosphate & Potash 0-20-20	—	—	18.92	W.T.*	2.16
Agrico 5-20-10.....	—	5.06	19.11	W.T.*	1.60
Armour Agricultural Chemical Co.					
Armour Vertagreen Plant Food for Commercial Crops 6-12-12 (2)	—	5.50	13.20	10.73	1.27
Consolidated Rendering Co.					
Corenco 0-15-30.....	—	—	16.00	24.98	5.02
Corenco 0-15-30.....	—	—	14.20	27.17	4.48
Corenco 8-16-16.....(2)	—	8.01	15.29	16.00	1.42
Davison Chemical Co.					
Davco 10-10-10.....	—	9.40	10.00	10.13	1.67
Eastern States Farmers' Exchange, Inc.					
E. S. 0-15-30.....(2)	—	—	14.29	30.00	1.42
Faesy & Besthoff, Inc.					
F & B Tomato Food 4-12-12...	—	4.50	9.76	12.00	(1)
G D Garden Products, Inc.					
Green D 10-6-4.....	—	9.05	6.20	3.51	2.85
Goulard & Oleno, Inc.					
G & O Rose Food 7-8-5.....(2)	.81	6.24	9.90	6.75	(1)
Hubbard-Hall Chemical Co.					
Liberty 5-15-30.....	—	5.04	14.35	30.00	1.30
Liberty 8-6-4.....(2)	.90	6.92	6.03	4.40	3.24
Massachusetts Nurseryman's Assn.					
Plant-O-Ganic 8-8-8.....	—	7.14	8.02	9.90	(1)
Old Fox Agricultural Sales, Inc.					
Old Fox No Pest Turf Food 8-6-2 (2) 1.24		W.T.*	6.60	3.30	**
Ra-Pid-Gro Corp.					
Ra-Pid-Gro 23-21-17.....(2)....	—	23.00	19.55	17.60	(1)
Sears, Roebuck & Co.					
Cross Country Evergreen Food 10-6-4.....	.17	8.76	6.90	4.83	1.09
Swift & Co.					
Instant Vigoro 19-28-14.....	—	18.00	28.10	14.96	(1)
Universal Chemical Co.					
Liquid M 17-24-17...	—	13.66	21.40	18.00	(1)

(1) Because these are small package fertilizers, it is not feasible to calculate commercial shortage per ton.

(2) See Table "Mixtures Substantially Complying with Guarantees".

* Within Tolerance.

** Seriously deficient in chlordane. Guaranteed 1.25%. Found .13%

Mixtures Substantially Complying with Guarantees

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Agricultural Producta Co.		
Blue Ribbon Lawn & Garden 5-10-5.....	1	—
Apco Broad Leaf Plant Food 6-10-4.....	1	1 25
Alaska Fertilizer Co.		
Alaska Fish Fertilizer 5-2-2.....	1	—
The American Agricultural Chemical Co.		
AA Fertilizer 0-15-30.....	1	—
AA Fertilizer 0-20-20.....	1	—
AA Plant Food 5-10-5.....	3	—
AA 5-10-10.....	1	—
AA Fertilizer 5-10-10-2.....	1	—
AA Fertilizer 8-16-16.....	2	—
AA 10-10-10.....	1	—
Agrico Phosphate & Potash 0-15-30.....	1	—
Agrico for New England 5-8-7.....	3	—
Agrico Bulb Food 5-9-6.....	2	1 95
Agrico for Gardens 5-10-5.....	1	—
Agrico for Potatoes 5-10-10-2.....	3	—
Agrico for Tobacco 6-3-6.....	1 ^a	2.70
Agrico for Turf 6-8-2.....	1	2.36
Agrico for Turf 6-8-2.....	1	2.28
Agrico for Lawns, Trees & Shrubs 6-10-4.....	1	.52
Agrico for Lawns, Trees & Shrubs 6-10-4.....	1	1.84
Agrico Country Club 6-10-4.....	1	.43
Agrico Country Club 6-10-4.....	1	.50
Agrico for Azalea, Camellias, Rhododendrons 6-10-4.....	1	.79
Agrico for Top Dressing 7-7-7.....	3	—
Agrico Country Club 8-6-4.....	1	1.49
Agrico Country Club 8-6-4.....	1	1.92
Agrico for New England 8-12-12.....	1	—
Agrico 8-16-8.....	2	—
Agrico 8-16-16 for Corn.....	2	—
Agrico for Turf 10-6-4.....	1	3.89
Agrico for Turf 10-6-4.....	1	3.42
Agrico for Turf 10-6-4.....	1	5.03
Agrico Top Dressing 12-12-12.....	2	—
Agrico Water Soluble Plant Food 17-17-17.....	1	—
10-10-10.....	9	—
American Bulb Co.		
Bulb Food 16-8-5.....	1	6.40
Armour Agricultural Chemical Co.		
Armour 0-15-30.....	1	—
Armour 7-7-7.....	1	—
Armour 8-16-16.....	1	—
Armour Big Crop 5-8-7.....	2	—
Armour Big Crop 5-10-10.....	1	—
Armour Big Crop 7-7-7.....	1	—
Armour Big Crop 8-16-16.....	1	—
Armour Big Crop 10-10-10.....	1	—

^a Potash in forms other than muriate

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Percentage of Nitrogen Fertilizer
Armour Gold Bond Tobacco Grower 6-3-6.....	1 <i>a</i>	2.24
Armour Home Garden Special 5-10-5.....	1	—
Armour Vertagreen Plant Food 5-10-5.....	1	—
Armour Vertagreen Plant Food for Commercial Crops 6-12-6..	2	—
Armour Vertagreen Plant Food for Commercial Crops 6-12-12..	1 <i>b</i>	—
Armour Vertagreen Turf Maker 8-6-2.....	1	3.73
Armour Vertagreen Plant Food for Commercial Crops 8-8-8...	1	—
Armour Vertagreen for Turf & Trees 10-6-4.....	1	1.53
Armour Vertagreen Turf Food with Chlordane 10-6-4.....	1	1.43
Atlas Fish Fertilizer Co.		
Atlas Fish Emulsion Fertilizer 5-1-1.....	2	—
F. A. Bartlett Tree Expert Co.		
Bartlett Green Tree Food 6-8-6.....	1	9.7
Joseph Breck & Sons, Corp.		
Breck's Garden Gro 5-10-10 2.....	1	—
Breck's Turf Gro 8-6-2.....	1	1.99
Breck's Velturf 10-6-4.....	1	8.36
Breck's Quick Life 16-32-16.....	1	—
Breck's New Improved Turf Gro 20-6-4.....	1	3.70
California Spray Chemical Co.,rp		
Ortho Lawn Groom 7-11-5.....	1	—
Ortho-Gro Liquid Plant Food 10-5-5.....	1	—
Ortho-Gro Liquid Plant Food 15-5-5.....	1	—
Carbola Chemical Co.		
CCC Triple 20 Plant Food 20-20-20.....	1	—
Chesnicka Landscape Service		
Chesnicka Sod Builder 9-7-4.....	1	2.44
Chesnicka Sod Builder with Chlordane 9-7-4.....	1	2.42
Clinton Nurseries		
New Era African Violet Food 5-12-19.....	1	—
New Era Vitamin Plant Food 7-15-8.....	1	—
Comstock, Ferre & Co.		
7-7-7.....	1	—
Consolidated Rendering Co.		
Corenco 5-8-7.....	2	—
Corenco 5-10-5.....	2	—
Corenco Home Garden 5-10-5.....	2	—
Corenco Rose Special 5-10-5.....	2	—
Corenco Rose Special 5-10-5.....	1	1.32
Corenco 5-10-10.....	11	—
Corenco 5-10-10-2.....	1	—
Corenco Perfection Tobacco Grower 6-3-6.....	1 <i>a</i>	3.35
Corenco Perfection Tobacco 6-3-6.....	1 <i>a</i>	3.57
Corenco Premium Tobacco Grower 6-3-6.....	1 <i>a</i>	3.60

a Potash in forms other than muriate*b* See table of "Mixtures Showing Deficiencies Exceeding Tolerances"

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Corenco 7-7-7.....	9	—
CorencoRhododendron, Azalea & Blueberry Special 7-7-7.....	2	—
Corenco 8-6-4.....	1	—
Corenco Landscape 8-6-4.....	1	.83
Corenco Landscape 8-6-4.....	1	.52
Corenco Turf Green 8-6-4.....	1	2.63
Corenco Turf Green 8-6-4.....	1	2.27
Corenco 8-16-16.....	13 <i>b</i>	—
Corenco 10-6-4.....	1	.08
Corenco 10-6-4.....	5	—
Corenco Timberline 10-8-2.....	1	3.52
Corence 10-10-10.....	3	—
Davison Chemical Co.		
Davco 0-15-30.....	1	—
Davco Turf & Garden 5-10-5.....	1	—
Davco 5-10-10.....	1	—
Davco 8-16-16.....	1	—
Doggett-Pfeill Co.		
XL 36 12-12-12.....	1	—
XL 60 15-30-15.....	1	—
XL 50 20-0-30.....	1	—
Doughton Seed Co.		
Doughton's Lawn Food 9-8-3.....	1	1.07
E. I. duPont deNemours & Co.		
duPont Solbule Plant Food 19-22-16.....	1	—
Eastern States Farmers' Exchange, Inc.		
E.S. 0-15-30.....	2 <i>b</i>	—
E.S. 0-25-25.....	1	—
E.S. 5-10-10-2.....	4	—
E.S. 8-12-12-2.....	3	—
E.S. 8-16-8-1.....	1	—
E.S. 8-16-16-1.....	5	—
E.S. 10-5-5-2.....	1	—
E.S. Green Lawn 10-5-5-2.....	1	5.57
E.S. 10-10-10-1.....	5	—
E.S. 10-10-10-2 L.C.....	2 <i>a</i>	—
E.S. 10-10-10-2 S.M.....	1	—
E.S. 15-10-10.....	2	—
E.S. Start-N-Gro 16-32-16.....	1	—
Edgewood Farms, Inc.		
Rose Food 18-9-5.....	1	6.58
The Espoma Co.		
Holly-Tone Plant Food 4-6-4.....	1	1.20

a Potash in forms other than muriate

b See table of "Mixtures Showing Deficiencies Exceeding Tolerances"

Mixtures Substantially Complying with Guarantees

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water- Insoluble Nitrogen
Essex County Cooperative Farming Assn.		
S-X 5-8-7.....	1	—
S-X 5-10-10-1.....	1	—
S-X 5-10-10-2.....	1	—
S-X 7-7-7.....	1	—
Faesy & Bestoff, Inc.		
F & B Azalea, Camellia & Rhododendron Food 5-10-10.....	1	1.09
F & B Evergreen Food 7-7-7.....	1	—
F & B Rose Food 8-10-4.....	1	2.13
F & B Rose Food 8-10-4.....	1	2.35
F & B Starter & Grower 15-30-15.....	1	—
Farm Bureau Assn.		
Farm Bureau 5-10-10.....	1	—
Farm Bureau 5-10-10-2.....	1	—
Farm Bureau 8-6-2.....	1	2.24
Farm Bureau 8-16-16.....	1	—
Farm Bureau 10-10-10.....	1	—
Forward House Division, Olin Mathieson Chemical Co.		
Plantrons 12-24-12.....	1	—
Frost & Higgins Co.		
Special Organic Fertilizer 8-6-4.....	1	2.72
Garfield Williamson, Inc.		
Wonderlawn Lawn Food 10-6-4.....	1	1.73
Wonderlawn Lawn Food 10-6-4.....	1	—
Glorion Division, Aluminum & Chemical Corp.		
Glorion 4-8-8.....	1	—
Goulard & Olena, Inc.		
G & O Tomato Food 3-12-13.....	1	—
G & O Rhododendron, Azalea, Camellia Food 3-20-3.....	1	.48
G & O Special Food for Bulbs 5-6-15.....	1	1.14
G & O Prisegro 5-10-5.....	2	—
G & O Rose Food 7-8-5.....	1 1/2	—
G & O Evergreen Tree Shrub Food 9-7-4.....	1	1.02
G & O Evergreen Tree Shrub Food 9-7-4.....	1	—
A. H. Hoffman, Inc.		
Hoffman's Azalea, Evergreen Food 4-6-10.....	1	.72
Hoffman's Azalea, Evergreen Food 4-6-10.....	1	.94
Hoffman's Rose Food 5-10-5.....	1	1.05
Hubbard Hall Chemical Co.		
Green Ribbon All Purpose 5-10-5.....	1	—
H & H Ever Green Food 4-10-4.....	1	—
H & H Plant Food 5-10-5.....	1	1.13
H & H Lawn Fertilizer 8-6-2.....	1	.83
H & H Turf & Tree Food 10-6-4.....	1	1.99
Liberty 0-15-30.....	1	—

b See table of "Mixtures Showing Deficiencies Exceeding Tolerances"

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentag of Water Insoluble Nitrogen
Liberty 0-20-20.....	1	—
Liberty 4-12-16.....	1	—
Liberty 5-8-7.....	2	—
Liberty 5-10-5.....	2	—
Liberty 5-10-10.....	2	—
Liberty 5-10-10-2.....	1 <i>a</i>	—
Liberty 6-3-6.....	1 <i>a</i>	—
Liberty 6-3-6.....	1 <i>a</i>	2.96
Liberty 6-3-6.....	1 <i>a</i>	2.66
Liberty 6-3-6.....	1 <i>a</i>	3.09
Liberty 6-8-8-2.....	1	—
Liberty 7-7-7.....	1	—
Liberty 8-6-4.....	1 <i>b</i>	.79
Liberty 8-6-4.....	1 <i>b</i>	.74
Liberty 8-6-4.....	1 <i>b</i>	.74
Liberty 8-8-8.....	1	—
Liberty 8-10-10-2.....	2	—
Liberty 8-16-16.....	3	—
Liberty 8-16-16-2.....	1	—
Liberty 10-10-10.....	3	—
Liberty 10-10-10-2.....	1	—
Old Deerfield 6-5-5.....	1	.95
Old Deerfield, 6-5-5.....	1	.91
Old Deerfield 8 6-4.....	1	1.37
Hydroponic Chemical Co., Inc.		
Hyponex 7-6-19.....	1	—
Hy-Trous Corp.		
Hy-Trous 4-8-4.....	1	—
International Minerals & Chemical Corp.		
Fertilis 5-10-5-2.....	1	—
Fertilic 8-6-2.....	5	—
Fertilis 8-6-2.....	1	1.81
Fertilis 8-6-2.....	1	1.86
Fertilis 8-6-2-1.....	1	1.88
Fertilis 8-6-2-1.....	1	1.68
International 4-12-16.....	11	—
International 5-8-7-1.....	2	—
International 5-10-5-1.....	2	—
International 5-10-10-2.....	3	—
International Rainbow 6-12-12-2.....	1	—
International 7-7-7-1.....	1	—
International Rainbow 8-12-12-2.....	1	—
International 8-16-16.....	1	—
International 10-10-10-1.....	1	—
K & K Fertilizer Service		
Old Reliable 5-8-7.....	1	—
Formula K Plant Food 5-10-10-2.....	1	—
Blue Star Tobacco Fertilizer 6-3-6.....	1 <i>a</i>	3.47
Triple 7 7-7-7.....	1	—
Pioneer Plant Food 8-6-4.....	1	.52

a Potash in forms other than muriate

b See table of "Mixtures Showing Deficiencies Exceeding Tolerances"

Mixtures Substantially Complying with Guarantees—Continued

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Lee Patton Seed Co.		
Patco's Lawn Food 9-8-3.....	1	1.48
Lexington Gardens, Inc.		
Bu-T-Gro 3-6-3.....	1	—
Bu-T-Gro Evergreen Food 4-10-4.....	1	—
Bu-T-Gro Plant Food 5-10-5.....	1	—
Bu-T-Gro 7-7-14.....	1	—
Bu-T-Gro 7-10-5.....	1	1.73
John D. Lyon, Inc.		
Lyon Old New England 6-8-3.....	1	5.17
Lyon Old New England 6-8-3.....	1	5.93
Old Fox Agricultural Sales, Inc.		
Old Fox 5-8-7.....	2	—
Old Fox 5-10-5.....	2	—
Old Fox 5-10-10.....	1	—
Old Fox 5-10-10-2.....	3	—
Old Fox 6-3-6-2.....	1 a	3.05
Old Fox 6-3-6-2.....	1 a	2.51
Old Fox 6-10-10-2.....	1	—
Old Fox 7-7-7.....	1	—
Old Fox 8-6-2.....	1 b	1.34
Old Fox 8-6-4.....	1	.08
Old Fox 8-12-12-2.....	1	—
Old Fox 10-10-10.....	5	—
Parks-Barnes, Inc.		
Black Magic Plant Food Tablets 2-3-2.....	1	—
Black Magic African Violet Blossom Booster 4-10-10.....	1	—
The Penn Co.		
Ferti-Flora 3-3-3.....	1	—
Plantabbs Corp.		
Plantabbs 11-15-20.....	1	—
Plant Products Co.		
Plant Prod 20-20-20.....	1	—
Ra-Pid-Gro Corp.		
Ra-Pid Gro 23-21-17.....	1 b	—
Ross Daniels, Inc.		
All Purpose Plant Food 8-16-8.....	1	—
Rose Plant Food 15-25-10.....	1	—
O. M. Scott & Sons, Inc.		
Scott's Turf Builder 20-10-5.....	1	6.35

a Potash in forms other than muriate

b See table of "Mixtures Showing Deficiencies Exceeding Tolerances"

Mixtures Substantially Complying with Guarantees—Concluded

Name of Manufacturer and Brand	Number of Samples Analyzed	Average Percentage of Water Insoluble Nitrogen
Sears, Roebuck & Co.		
Cross Country Bull Food 4-12-8.....	1	.16
Cross Country Plant Food 5-10-5.....	1	—
Cross Country Rose Food 5-10-5.....	1	.17
Cross Country Azalia, Camellia Food 8-8-8.....	1	—
Cross Country Liquid Plant Food 15-10-5.....	1	—
Cross Country Instant Tomato Food 15-30-15.....	1	—
Cross Country Instant Rose Food 20-20-20.....	2	—
Stern's Nurseries, Inc.		
Stern's Miracle-Gro 15-30-15.....	1	—
Stern's Miracid 30-10-10.....	1	—
Stim-U-Plant Laboratories		
Stim-U-Plant African Violet Food 5-8-7.....	1	.03
Stim-U-Plant African Violet Food 5-8-7.....	1	—
Stim-U-Plant Food Tablets 11-12-15.....	1	—
Swift & Co.		
Vigoro Complete Plant Food 6-10-4.....	1	.34
Vigoro Complete Plant Food 6-10-4.....	1	.15
Golden Vigoro 6-10-4.....	1	2.49
Vigoro Rose Food 6-10-4.....	1	1.55
Vigoro Rose Food 6-10-4.....	1	1.39
Swift's Golf Special 8-6-4.....	1	.78
Instant Vigoro 20-10-15.....	1	—
Swiss Farms		
African Violet Food 5-14-9.....	1	.06
Taft Oil Co.		
Liquid Lawn Fertilizer 10-8-3.....	1	—
Universal Chemical Co.		
Electra Plant Food 5-10-3.....	1	2.31
Stag Green Lawn Food 8-6-2.....	1	4.72
Hydropon 10-12-25.....	1	—
Winslow's Nurseries, Inc.		
Winslow's All Purpose Green Valley Plant Food 5-10-5.....	1	—
Winslow's Green Valley High Organic Turf Food 8-6-2.....	1	1.11
F. H. Woodruff & Sons, Inc.		
Weed Mix Lawn Food 6-10-4.....	1	.76
Gro Sod Lawn Food 10-6-4.....	1	1.83

NITROGEN COMPOUNDS

Manufacturer and Brand	Nitrogen	
	Found	Guaranteed
Allied Chemical & Dye Corp		
Arcadian Urea	45.82	45
The American Agricultural Chemical Co.		
Agrinite.....	7.21	7.
Agrinite.....	6.43*	7.
Agrinite.....	W.T.**	7.
American Cyanamid Co.		
Aeropills Ammonium Nitrate.....	33.65	33.50
Aeropills Ammonium Nitrate.....	33.57	33.50
Aeropills Ammonium Nitrate.....	33.71	33.50
Aeropills Ammonium Nitrate.....	34.02	33.50
Aeropills Ammonium Nitrate.....	33.50	33.50
21% Aero Cyanamid.....	21.13	21.
21% Aero Cyanamid.....	21.41	21.
21% Aero Cyanamid.....	21.33	21.
21% Aero Cyanamid.....	21.44	21.
Lawn & Garden Cyanamid.....	19.92***	21.
Borden Co., Chemical Div.		
Borden's "38".....	38.05	38.
Consolidated Rendering Co.		
33.5% Ammonium Nitrate.....	34.3	33.5
E. I. du Pont de Nemours & Co.		
dePont Uramite Fertilizer Compound.....	38.36	38.
Eastern States Farmers' Exchange, Inc.		
E.S. Sulphate of Ammonia.....	21.06	20.5
Faesy & Besthoff, Inc.		
F & B Cottonseed Meal.....	6.86	6.
F & B Nitrate of Soda.....	16.18	16.
Goulard & Olenz, Inc.		
G & O Cottonseed Meal.....	W.T.**	6.7
G & O Nitrate of Soda.....	16.11	16.
G & O Sulphate of Ammonia.....	20.75	20.75
Hubbard Hall Chemical Co.		
H & H Cottonseed Meal.....	6.61	6.
H & H Nitrate of Soda.....	16.20	16.
Humphreys-Godwin Co.		
Dixie Brand Cottonseed Meal.....	W.T.**	6.5
Monsanto Chemical Co.		
Lion Brand Ammonium Nitrate.....	33.62	33.50
Old Fox Agricultural Sales, Inc.		
Old Fox Urea.....	W.T.**	5.
O. M. Scott & Sons, Inc.		
Scott's New Bonus Weed & Feed.....	26.09	25
Sears, Roebuck & Co.		
Cross Country Sulphate of Ammonia.....	21.05	20.5

* Approximate shortage per ton \$4.56

** Within Tolerance

*** Deficient

PRODUCTS SUPPLYING ORGANIC NITROGEN AND PHOSPHORIC ACID

Manufacturer and Brand	Total Nitrogen Found	Total Phosphoric Acid Found	Available Phosphoric Acid Found
Agricultural Products Co.			
Apco Bone Meal 2.25-20.....	2.68	26.20	—
Apco Bone Meal 2.25-20.....	2.91	25.40	—
Apco Organic Lawn Food 5-3.....	5.58	8.65	8.05
The American Agricultural Chemical Co.			
Bone Meal 1.25-25.....	2.84	26.70	—
Armour Agricultural Chemical Co.			
Armour Bone Meal 2.30-23.....	2.65	27.70	—
Armourganic Plant Food 5-5.....	5.48	6.65	5.98
Jos. Breck & Sons, Inc.			
Breck's Bone Meal 2.5-20.....	2.5	26.40	—
Consolidated Rendering Co.			
Corenco Ground Bone 2-22.....	2.82	26.40	—
Corenco Ground Bone 2-22.....	2.58	27.60	—
Corenco Ground Bone 2-22.....	2.41	28.00	—
Corenco Ground Bone 2-22.....	2.10	27.20	—
Faesy & Besthoff, Inc.			
F & B Pure Steamed Bone Meal 2.47-23....	2.77	27.50	—
F & B Pure Steamed Bone Meal 2.47-23....	2.49	27.30	—
Fiestar, Inc.			
Fiestar 2-2.....	2.00	—	2.20
Fiestar 2-2.....	2.16	—	2.00
A. H. Hoffman, Inc.			
Hoffman Bone Meal 3-13.....	6.73	18.00	6.30*
The Hubbard-Hall Chemical Co.			
H & H Bone Meal 2-23.....	2.75	26.20	—
H & H Bone Meal 2-23.....	2.81	27.40	—
International Minerals & Chemical Co.			
International Bone Meal 2.47-23.....	2.47	27.40	—
International Mello Green 5-5.....	5.03	—	5.00
International Mello Green 5-5.....	5.58	7.15	6.61
Lexington Gardens, Inc.			
Bu-T-Gro Bone Meal 2-23.....	2.38	27.60	—
Littlefield-Wyman Nurseries			
Gardner's Green Bone Meal 2-20.....	3.00	26.00	—
Sears, Roebuck Co.			
Cross Country Bone Meal 2-23.....	2.47	27.00	—
Cross Country Lawn Food with Weed Killer 5-5.....	5.00	—	5.30
Cross Country Lawn Food 5-5.....	5.72	7.90	7.24
Sewerage Commission of Milwaukee			
Milorganite 5.5-4.....	5.92	4.60	4.10
Milorganite 5.5-4.....	W.T.**	—	5.30
Milorganite 5.5-4.....	5.97	4.50	4.00

* Deficient in available phosphoric acid.

** Within tolerance

SUPERPHOSPHATE AND PHOSPHATE ROCK

Manufacturer and Brand	Phosphoric Acid	Total Available Phosphoric Acid	
		Found	Guaranteed
The American Agricultural Chemical Co.			
Normal Superphosphate 18%.....	—	18.40	18.
Agri-Phos Superphosphate 20%.....	—	20.50	20.
Agri-Phos Superphosphate 20%.....	20.75	20.36	20.
Agri-Phos Superphosphate 20%.....	—	20.0	20.
Ground Phosphate Roc.....	31.40*	—	—
Armour Agricultural Chemical Co.			
Armour's Superphosphate 20%.....	21.68	20.00	20.
Consolidated Rendering Co.			
Corenco Superphosphate 20%.....	—	20.10	20.
Corenco Superphosphate 20%.....	—	W.T.**	20.
Corenco Superphosphate 20%.....	—	20.20	20.
Corenco Superphosphate 20%.....	—	20.9	20.
Corenco Superphosphate 20%.....	—	20.9	20.
Corenco Superphosphate 20%.....	—	21.1	20.
Corenco Superphosphate 20%.....	—	21.8	20.
Davison Chemical Co.			
Davco Superphosphate 20%.....	—	21.20	20.
Eastern States Farmers' Exchange, Inc.			
Eastern States Superphosphate 20%.....	—	20.10	20.
Eastern States Superphosphate 20%.....	—	21.40	20.
Facsy & Besthoff, Inc.			
F & B Superphosphate 20%.....	20.70	18.98***	20.
F & B Superphosphate 20%.....	20.80	19.26***	20.
Farm Bureau Assn.			
Farm Bureau Superphosphate 20%.....	19.45	19.35****	20.
Farm Bureau Superphosphate 20%.....	—	20.55	20.
Goulard & Olena, Inc.			
G & O Superphosphate 20%.....	—	W.T.**	20.
G & O Superphosphate 20%.....	—	20.90	20.
International Minerals & Chemical Corp.			
International Superphosphate 20%.....	—	W.T.**	20.
International Superphosphate 20%.....	—	21.40	20.
International Superphosphate 20%.....	—	20.40	20.
International Superphosphate 20%.....	—	21.00	20.
International Superphosphate 20%.....	—	20.60	20.
International Superphosphate 20%.....	—	20.70	20.

* Guaranteed 31% total phosphoric acid

** Within tolerance

*** Deficient in available phosphoric acid

**** Approximate shortage per ton \$1.30

POTASH COMPOUNDS

Manufacturer and Brand	Water Soluble Potash	
	Found	Guaranteed
American Agricultural Chemical Co.		
Muriate of Potash.....	60.5	60.
Muriate of Potash.....	60.5	60.
Muriate of Potash.....	60.48	60.
Muriate of Potash.....	61.90	60.
Muriate of Potash.....	60.48	60.
Muriate of Potash.....	60.48	60.
Faesy & Besthoff, Inc.		
F & B Muriate of Potash.....	58.29*	60.
Goulard & Olen, Inc.		
G & O Muriate of Potash.....	60.22	60.
G & O Muriate of Potash.....	60.48	60.
The Hubbard-Hall Chemical Co.		
Muriate of Potash.....	60.48	60.
Muriate of Potash.....	60.89	60.
Potassium sulfate.....	48.20	48.
International Minerals & Chemical Corp.		
International Muriate of Potash.....	60.48	60.
Potash Company of America		
Granular Muriate of Potash	60.48	60.

* Deficient in potash

PULVERIZED ANIMAL MANURES

Dried animal manures, Sheep Manure, and Cow Manure particularly, are regarded by many gardeners as possessing plant food values far superior to those of other garden fertilizers. The organic gardeners especially think these manures have special merit.

The dried manures do supply considerable organic matter and other plant food factors not found in regular commercial garden fertilizers if the manures do not contain high amounts of sand or bedding materials.

The Massachusetts Fertilizer Control Service found some of these products to contain as high as 75% mineral matter, most of it sand. In such cases the so-called dried manures contain only a little over 20% organic matter, and probably not over 10% actual manure.

In other cases, the organic matter is high but is mainly bedding materials such as tobacco stems, shavings, etc. In these instances, the actual manure content also is less than 10%. In products of this kind, the nitrogen, phosphoric acid, and potash cost about five times the amount that the gardener would have to pay for the same amount of plant food elements in a good grade of garden fertilizer.

The Control Service has stopped the sale of some of the dried manures. Some manufacturers have voluntarily removed from sale the products when informed by the Control Service of their nature. There also are good grades of dried manures on the market.

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Organic Matter	Sand and Inert Matter	Microscopic Examination
The American Agricultural Chemical Co.						
Dried Sheep Manure & Inert Matter 1.25-1-2	1.62	1.65	2.44	54.3	25.3	As represented.
Dried Sheep Manure & Inert Matter 1.25-1-2	1.67	1.60	2.49	52.2	26.1	Mixed sheep and cow manure.
Dried Sheep Manure & Inert Matter 1.25-1-2	1.09	1.15	1.50	22.5	62.7	Sand content excessive. Voluntarily withdrawn from sale.
Armour Agricultural Chemical Co.						
Armour Cattle Manure 2-1-2	2.33	1.35	2.22	61.4	25.9	As represented.
Armour Cattle Manure 2-1-2	2.00	2.20	3.24		24.4	As represented.
Armour Sheep Manure & Inert Matter 1.25-1-2	W.T.*	1.00	5.52	62.8	12.9	Mixed sheep and cow manure. With heavy tobacco stalks.
Armour Sheep Manure & Inert Matter 1.25-1-2	1.02	1.20	3.24	31.6	50.2	With heavy tobacco stalks.
Armour Sheep Manure & Inert Matter 1.25-1-2	W.T.*	1.35	3.24	31.6	47.0	Mixed sheep and cow manure. As represented.
Atkins & Durbrow, Inc.						
Discomure 3-2-1	3.48	3.75	2.22	66.2	6.8	A good grade—poorly manure and later

PULVERIZED ANIMAL MANURES—Continued

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Organic Matter	Sand and Inert Matter	Microscopic Examination
Jos. Breck & Sons, Inc.						
Breck's Cow Manure 2-1-1	2.02	3.70	1.68	63.4	13.1	As represented.
Coastal Dry Manure Corp.						
CD Organic Dry Manure 1-1-1	1.84	1.90	1.30	39.9	45.9	Mislabeled. Must be labeled "CD Organic Dry Manure and Inert Matter."
CD Organic Dry Manure 1-1-1	1.47	1.60	1.30	35.0	51.6	Mislabeled. Must be labeled "CD Organic Dry Manure and Inert Matter."
Consolidated Rendering Co.						
Corenco Sheep Manure 1.25-1-2	1.58	1.75	2.34	53.0	28.1	As represented.
Corenco Sheep Manure 1.25-1-2	1.72	1.75	2.70	50.3	28.8	As represented.
Corenco Sheep Manure 1.25-1-2	1.86	1.70	2.97	52.6	25.4	As represented.
A. H. Hoffman, Inc.						
Hoffman Cow Manure 2-1-1	2.00	1.45	2.70	81.7	2.5	As represented.
Hoffman Cow Manure 2-1-1	2.00	1.50	2.28	83.7	1.9	As represented.
Hoffman Sheep Manure 1-1-2	1.30	1.75	4.80	37.8	40.0	Mislabeled. Product is sheep manure and inert matter.
The Hubbard-Hall Chemical Co.						
H & H Cow Manure 2-1-1	1.61	1.00	7.94	71.1	3.90	Mostly tobacco stems. Contains very little cow manure. Relabeled as "Tobacco Stems and Cow Manure."
H & H Cow Manure & Inert Matter 2-1-1	2.08	1.45	1.60	37.6	46.9	As represented.
H & H Sheep Manure & Inert Matter 1.25-1-1	1.58	1.65	2.67	44.3	32.0	As represented.
H & H Sheep Manure & Inert Matter 1.25-1-1	1.51	W.T.*	7.56	—	6.8	Contains mostly tobacco stems and very little manure. Product relabeled.
Maegey D-hydrating Co.						
Fertal Gro Cow Manure 2-1-7	1.24	.65	5.50	60.0	13.1	Deficient in nitrogen and phosphoric acid and potash. Microscopic examination indicates product to consist mainly of tobacco stems with very little manure. Withdrawn from sale.

PULVERIZED ANIMAL MANURES—Concluded

Manufacturer and Brand	Total Nitrogen	Total Phosphoric Acid	Water Soluble Potash	Organic Matter	Sand and Inert Matter	Macroscopic Examination
Fertal Gro Cow Manure 2-1-7.....	1.49	.85	5.40	50.0	14.9	Deficient in nitrogen, phosphoric acid and potash. Macroscopic examination indicates sample to consist mainly of tobacco stems with very little mature. With- drawn from sale.
Fertal Gro Cow Manure 2-1-7....	1.66	.60	7.44	61.9	12.9	Consists mainly of tobacco stems and grass stems, inert. Withdrawn from sale.
Fertal Gro Cow Manure 2-1-7.....	1.62	.65	7.24	60.3	15.3	Consists mainly of tobacco stems and grass stems, mostly with very little mature. Withdrawn from sale.
Dehydrated Sheep Manure 2-1-5.....	1.22	.65	5.50	62.9	10.6	Deficient in nitrogen and phosphoric acid. Mainly tobacco stems with very little mature. Withdrawn from sale.
Dehydrated Sheep Manure 2-1-5.....	1.23	.65	5.18	85.4	12.7	Deficient in nitrogen, phosphoric acid. Mainly tobacco stems with very little mature. Withdrawn from sale.
Natural Plant Food Co.						
Longhorn Cattle Manure 2-1-2.....	2.16	1.15	W.T.S.	63.2	70.9	As recommended.
Ran-shorn Sheep Manure 2-1-2.....	2.00	1.05	2.58	53.4	25.2	As recommended. Mainly tobacco stems.
Sears, Roebuck & Co.						
Cross Country Cattle Manure 1-25-1-2.....	2.69	1.05	2.97		25.2	As recommended.
Cross Country Sheep Manure 1-25-1-2.....	2.12	1.25	2.98	43.4	33.3	Medium sized. Sample is lamp tobacco and inert matter.
Triple A Mills.						
Star Gro 3-25-2-5-1-5.....	3.33	3.95	2.97	68.8	3.1	As recommended.
Walker Gordon Laboratory Co.						
Bovung Dehydrated Cow Manure 2-1-2.....	2.12	1.50	2.37	85.4	1.80	As recommended.

* Deficient

AGRICULTURAL LIME PRODUCTS

Manufacturer & Brand	Calcium Oxide (CaO)		Magnesium Oxide (MgO)		Neutralizing Value Expressed in Terms of Calcium Oxide (Percent)	Insoluble Matter	Mechanical Analysis (Percent)	
	Found	Guaranteed	Found	Guaranteed			Finer Than 100-mesh	Coarser Than 20-mesh
Agricultural Products Co.								
Apco Agricultural Lime....	31.6	30.	21.5	20.	59.5	.4	94.2	none
Conklin Limestone Co., Inc.								
High Magnesium Agricultural Ground Limestone....	29.0	30.	20.0	18.	55.5	7.9	46.3	none
Garden Limestone....	36.3	34.	6.2	1.5	42.4	23.2	52.7	1.8
Standard Agricultural Ground Limestone....	36.7	34.	8.7	8.	46.5	17.4	52.2	3.1
A. H. Hoffman, Inc.								
Hoffman Hydrated Lime....	72.0	60.	1.2	1.	72.0	1.6	-	-
Lee Lime Corp.								
Lee ABC Hydrated Lime....	43.7	43.	28.7	28.	82.5	1.4	-	-
Lee ABC Hydrated Lime....	43.2	43.	29.9	28.	83.3	.4	-	-
Lee Double Strength Agricultural Hydrated Lime....	47.6	43.	31.5	30.	90.6	1.0	-	-
Lee Pulverized Limestone....	33.7	35.	13.4	5.	50.8	13.1	91.8	none
Lee Pulverized Limestone....	30.7	35.	17.2	5.	52.2	10.9	91.8	.1
Lee Lawn & Garden Lime....	30.3*	38.	17.4	1.5	52.4	11.5	93.3	none
Lee Lawn & Garden Lime....	34.2	38.	14.0	5.	51.4	12.2	92.7	none
Lee Pulverized Limestone....	31.1	30.	20.6	20.	59.2	.6	45.7	4.1
Lee Pulverized Limestone....	31.6	30.	20.5	20.	59.0	-	-	-
Lee Pulverized Limestone....	30.5	30.	21.6	20.	59.3	1.4	-	-
Lee Pulverized Limestone....	30.7	30.	21.2	20.	-	-	-	-
Lee Pulverized Limestone....	30.5	30.	21.5	20.	-	-	-	-
Lee Pulverized Limestone....	30.5	30.	21.5	20.	-	-	-	-
Lee Pulverized Limestone....	30.3	30.	21.1	20.	59.5	-	-	-
Lee Pulverized Limestone....	30.2	30.	21.9	20.	59.5	-	-	-
Lee Pulverized Limestone....	30.2	30.	21.7	20.	59.5	-	-	-
Lee Pulverized Limestone....	30.0	30.	21.9	20.	59.5	-	-	-

* Deficient

AGRICULTURAL LIME PRODUCTS—Concluded

Manufacturer & Brand	Calcium Oxide (CaO)		Magnesium Oxide (MgO)		Neutralizing Value Expressed in Terms of Calcium Oxide (Percent)	Insoluble Matter	Mechanical Analysis (Percent)	
	Found	Guaranteed	Found	Guaranteed			Finer Than 100-mesh	(Coarser Than 20-mesh) %
Lee Pulverized Limestone	30.7	30.	21.6	20.	—	—	48.4	2.4
Lee Pulverized Limestone	30.5	30.	22.6	20.	—	—	—	—
Lee Pulverized Limestone	31.4	30.	22.4	20.	59.3	—	—	—
Lee Pulverized Limestone	31.1	30.	21.7	20.	59.3	—	—	—
Lee Pulverized Limestone	30.5	30.	20.9	20.	59.0	—	—	—
Lee Pulverized Limestone	30.0	30.	21.1	20.	59.2	—	—	—
Lee Pulverized Limestone	29.8	30.	20.6	20.	58.0	—	—	—
Lee Pulverized Limestone	35.4	35.	25.6	25.	69.2	.7	—	—
Today Agra Hydrate	38.5	35.	27.5	25.	74.0	.8	—	—
New England Lime Co.								
Agricultural Limestone	51.9	53.	1.2	.5	52.2	6.5	94.8	6.5
Nelson Agricultural Limestone	31.1	30.	22.8	21.	60.7	.7	74.0	none
Nelson Agricultural Hydrated Lime	46.7	47.	31.0	31.	88.4	.8	—	—
Nelson Agricultural Hydrated Lime	73.5	73.	.6	.5	73.8	.3	—	—
Nelson Land Lime	40.2	35.	29.0	25.	78.8	2.4	—	—
O. M. Scott & Sons, Inc.								
Scott's Soil Improver	26.8	14.	10.4	9.24	26.3	—	—	—
United States Gypsum Co.								
USG Cheshire Land Lime	65.3	60.	1.2	.25	65.9	2.9	—	—
Red Top General Purpose Hydrated Lime	73.1	70.	.6	trace	73.4	.3	—	—
Red Top Agricultural Hydrated Lime	73.1	70.	.6	trace	73.8	.2	—	—
USG Agricultural Limestone	54.0	50.5	1.6	.25	55.6	3.8	72.1	none
USG Agricultural Limestone	29.0	30.	19.3	20.	52.8	12.0	51.0	none
USG Agricultural Hydrated Lime	30.5	30.	20.6	20.	57.8	—	—	—
USG Kemuland Land Lime	65.3	60.	.9	.25	64.9	1.6	—	—

DIRECTORY OF MANUFACTURERS WHO REGISTERED FERTILIZERS FOR SALE IN MASSACHUSETTS IN 1959

Agricultural Products, 156 Valley St., E. Providence, R. I.
Alaska Fertilizer Co., 84 Seneca St., Seattle 1, Wash.
Allied Chemical & Dye Corp., Nitrogen Div., Hopewell, Va.
American Agricultural Chemical Co., 285 River St., North Weymouth, Mass.
American Bulb Co., Marysville, Ohio
American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.
American Liquid Fertilizer Co., Inc., 2nd St. at St. Clair, Marietta, Ohio
Armour Agricultural Chemical Co., Carteret, N. J.
Atlas Fish Fertilizer Co., 1 Drum St., San Francisco 11, Cal.

F. A. Bartlett Tree Expert Co., 2770 Summer St. Stamford, Conn.
Better Homes Bureau, 165 East Union St., Newark, N. Y.
Bonide Chemical Co., 382 North Genesee St., Utica 4, N. Y.
Bonnie Green Products Co., Front & Bainbridge Sts., Philadelphia, Pa.
Borden Co., Chemical Div., 350 Madison Ave., New York 17, N. Y.
Joseph Breck & Sons Corp., 401 Summer St., Boston 10, Mass.
Budd Agricultural Sales, 14 Deborah St., Palmer, Mass.

California Spray-Chemical Corp., Lucas and Ortho Way, Richmond, Cal.
Carbola Chemical Co., Inc., Natural Bridge, N. Y.
Chesnicka Landscape Service, 47 Broad St., Westfield, Mass.
Chiguano Compost Corp., Cherry St., Marion, Conn.
Chilean Nitrate Sales Corp., 120 Broadway, New York 5, N. Y.
Clapper Co., 1121 Washington St., West Newton 65, Mass.
Clinton Nurseries, Clinton, Conn.
Cloro-Spray Corp., 129 State St., Dover Del.
Cocke & Co., 208 William-Oliver Bldg., Atlanta 3, Ga.
Consolidated Rendering Co., 178 Atlantic Ave., Boston 10, Mass.
Cypress Gardens Industries, Inc., P.O. Box 10846, St. Petersburg, Florida

Davey Tree Expert Co., 117 South Water St., Kent, Ohio
Dayton Fertilizer Corp., Dayton, N. J.
Doggett-Pfeil Co., 681 Morris Turnpike, Springfield, N. J.
Doughton Seed Co., 253 Brunswick St., Jersey City 2, N. J.
E. I. du Pont de Nemours & Co., Wilmington, Del.

Eastern States Farmers' Exchange, Inc., 26 Central St., West Springfield, Mass.
Edgewood Farms, Inc., Marysville, Ohio
Essex County Cooperative Farming Association, 144 South Main St., Topsfield, Mass.
Excell Laboratories, Inc., 2732 Indiana Ave., Chicago, Ill.

Faesy & Besthoff, Inc., 25 East 26th St., New York 10, N. Y.
Farm Bureau Association, 155 Lexington St., Waltham 54, Mass.
Fiestar, Inc., 655 Fifth Ave., New York 22, N. Y.
Frank's Market Garden, 1398 Allen St., Springfield, Mass.
Frost & Higgins Co., 20 Mill St., Arlington 74, Mass.

G. D. Garden Products Inc., 11th St., & Railroad Ave., Huntington Station, N. Y.
G. D. Poultry, Inc., 95 Spring St., Bridgewater, Mass.
Garfield-Williamson, Inc., 1072 Westside Ave., Jersey City 6, N. J.
Goulard & Olena, Inc., Skillman, N. J.
W. R. Grace & Co., Davison Chemical Div., Baltimore, Md.
W. R. Grace & Co., Grace Chemical Div., 501 Home Federal Bldg., Memphis 3, Tenn.

Chas. C. Hart Seed Co., 304 Main St., Wethersfield, Conn.
 Heller Greenhouse Laboratories, 218 East Pikes Peak Ave., Colorado Springs, Col.
 Hershey Estates, Inc., Hershey, Pa.
 A. H. Hoffman, Inc., Landisville, Penn.
 Horticultural Chemical Co., 96 Forrest St., Jersey City 5, N. J.
 Hubbard-Hall Chemical Co., 28 Benedict St., Waterbury, Conn.
 Humphreys-Godwin Co., 2246 Park Ave., Memphis, Tenn.
 Hydroponic Chemical Co., Inc., Copley, Ohio
 Hy-Trous Corp., 16 Fowle St., Woburn, Mass.

Independence Hall Seed Co., 2700 Wilmarco Ave., Baltimore 23, Md.
 International Minerals & Chemical Corp., Woburn, Mass.
 International Minerals & Chemical Corp., Phosphate Chemicals Div., Old Orchard Rd., Skokie, Ill.

K & K Fertilizer Service, 238 Russell St., Hadley, Mass.
 Spencer Kellogg & Sons, Inc., 98 Delaware Ave., Buffalo 2, N. Y.

Lawn-Tex, Inc., 1640 West Fulton St., Chicago, Ill.
 Lebanon Chemical Corp., Lebanon, Penn.
 Lee Patten Seed Co., 360 Ninth St., Jersey City 2, N. J.
 Leeds Chemical Products, Inc., 112 East Walton St., Chicago, Ill.
 Lexington Garden, Inc., 92 Hancock St., Lexington, Mass.
 O. E. Linck Co., Inc., Clifton, N. J.
 Littlefield-Wyman Nurseries, Inc., 227 Centre Ave., Abington, Mass.
 Loncala Phosphate Co., High Springs, Florida
 L. B. Lovitt & Co., 314 Cotton Exchange Bldg., Memphis, Tenn.
 John D. Lyon, Inc., 143 Alewife Brook Pkway., Cambridge 40, Mass.

Maego Dehydrating Co., Lexington, North Carolina
 Mamlon Co., 1089 Whalley Ave., New Haven 15, Conn.
 Mass. Nurserymen's Assn., 1601 Hancock St., Quincy, Mass.
 McKesson & Robbins, Inc., 79 Milk St., Boston 9, Mass.
 Monsanto Chemical Co., 800 N. Lindbergh Blvd., St. Louis 66, Mo.

Natural Plant Food Co., 210 West California St., Oklahoma City 2, Okla.
 Nitro-Form Agricultural Chemicals Div., Woonsocket Color & Chemical Co., Inc.
 92 Sunnyside Ave., Woonsocket, R. I.
 Nott Mgt. Co., Inc., 200 South Water St., Poughkeepsie, N. Y.

Old Fox Agricultural Sales, Inc., 49 Valley St., East Providence, R. I.
 Olin Mathieson Chemical Corp., Forward House Div., P.O. Box. 991, Little Rock, Ark.

Parks-Barnes, Inc., 530 Sixth St., Hermosa Beach, Cal.
 Pax Co., P. O. Box 2310, Salt Lake City, Utah
 Plant Products Corp., Kennedy Ave., Blue Points, L. I., N. Y.
 Plantabbs Corp., 1105 Maryland Ave., Baltimore 1, Md.
 Plant Shine Co., Div. of Schultz Co., 404 So. 4th St., St. Louis 2, Missouri

Ra-Pid-Gro Corp., 88 Ossian St., Dansville, N. Y.
 The Renard Co., 223 Riverdale Ave., Yonkers N. Y.
 Ruhm Phosphate & Chemical Co., Columbia, Tenn.

O. M. Scott & Sons Co., Maryville, Ohio
 Seaboard Seed Co., 701 S. Front St., Philadelphia, Pa.
 Sears, Roebuck & Co., 925 South Homan Ave., Chicago 7, Ill.
 Sewerage Commission of the City of Milwaukee, Milwaukee 1, Wis.
 Sohio Chemical Co., P. O. Box 628, Lima, Ohio
 Stanton Co., Holland, Mich.
 Stern's Garden Products, Inc., 404 William St., Geneva, N. Y.
 Stim-U-Plant Laboratories, Inc., 2077 Parkwood Ave., Columbus 19, Ohio
 Stockdale Fertilizer Co., Inc., Morris, Ill.
 Swift & Co., Plant Food Div., Hartford 1, Conn.
 Swiss Farms, Inc., Philmont, N. Y.

Taft Oil Co., Inc., 111 Lyman St., Holyoke, Mass.
Tennessee Corp., 617-27 Grant Bldg., Atlanta, Ga.
Town & Country Products, 1072 West Side Ave., Jersey City, N. J.
Triple A Mills, Townsend Harbor, Mass.

United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Penn.
Universal Chemical Co., 52 Oakville St., West Lynn, Mass.

Valley Feed & Supply Co., Inc., Union Road, Spring Valley, N. Y.

West Concord Poultry Farm, Harrington Ave., W. Concord, Mass.
Wjlbur-Ellis Co., 800 Second Ave., New York 17, N. Y.
Winslow Nurseries, Inc., Needham, Mass.
Winslow Nurseries, Inc., Needham, Mass.
Woodruff Lawn Products, 205 Church St., New Haven 2, Conn.
F. H. Woodruff & Sons, Inc., Milford, Conn.
S. D. Woodruff & Sons of Wethersfield, Inc., 304 Main St., Wethersfield, Conn.

**DIRECTORY OF MANUFACTURERS WHO REGISTERED
AGRICULTURAL LIME PRODUCTS FOR SALE
IN MASSACHUSETTS IN 1959**

Conklin Limestone Co., Inc., Canaan, Conn.
Conklin Limestone Co., Inc., R.F.D , Saylesville, R. I.
Crawford's Wholesale Garden Supplies, 156 Valley St., Providence, R I.
A. H. Hoffman, Inc. Landisville, Penn.
Lee Lime Corp., Marble St., Lee, Mass.
Limestone Products Corp., of America, 122 Main St., Newton, N. J.
New England Lime Co., Adams, Mass.
O. M. Scott & Sons Co., Marysville, Ohio
Swiss Farms, Inc., Philmont, N. Y.
United States Gypsum Co., 300 West Adams St., Chicago 6, Ill.

Seed Inspection

BY

Seed Control Service Staff

Department of Entomology and Plant Pathology

Massachusetts Agricultural Experiment Station



This report, the thirty-second in seed control service, is a record of work delegated to the Massachusetts Agricultural Experiment Station during 1959 by authority of Chapter 94 as amended by Chapter 377 of the Acts of 1946.

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*Within each table the wholesalers are listed in alphabetical order and the various kinds of seeds picked up by our State Seed Inspectors follow the same alphabetical arrangement. The number preceding each analysis is for identification and reference. The line to the right of the letter "L" gives information copied from the label; that to the right of "F" what was found in the laboratory analysis.

SEED LABORATORY REPORT FOR THE SEASON 1959

By the Seed Control Service Staff of the
Department of Entomology and Plant Pathology

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Stephen Olynick, *State Inspector*¹

From November 1, 1958 to November 1, 1959, The Seed Laboratory received 3195 samples of seed, of which 1131 were collected by the State Department of Agriculture and 2061 were sent in by seedsmen, farmers, and various State units. Only the 1131 official samples are reported in the tables.

Classification of the samples for which tests were completed, with the total number of laboratory tests involved, is listed in the following summary:

NUMBER OF SAMPLES		NUMBER OF TESTS	
		PURITY	GERMINATION
360	Field Crops for Purity and Germination	360	360
239	Field Crops for Germination . . . . .	...	239
3	Field Crops for Purity	3	...
102	Lawn Mixtures and Other Types of Mixtures, for Purity: Germinations involving 460 ingredients.	102	160
85	Lawn Mixtures for Germination; Germinations in- volving 291 ingredients . . . . .	...	291
2034	Vegetable Samples . . . . .	...	2034
21	Tree Samples . . . . .	...	21
39	Tobacco Seed Samples . . . . .	...	39
312	Flower Seed Samples . . . . .	...	312
3195		465	3756

Field Tests to determine trueness-to-type consisted of 78 samples of vegetable seed and 297 samples of flower seeds, respectively.

The Seed Laboratory cleaned 39 lots of tobacco seed samples for Connecticut Valley farmers. The gross weight of the tobacco seed samples was 23.98 pounds, and the net weight for the cleaned seed was 19.20 pounds.

¹Employed by the State Department of Agriculture.

²Appointed August 21, 1959.

Results of Inspection and Analyses of Field Seeds—Sections 261 B1 and 261 C.

Each lot of Agricultural Seeds must be labeled to show the commonly accepted name and variety; except that for Barley, Buckwheat, Oats, Rye, and Wheat, when the variety is unknown, the label shall bear the statement: "Variety Unknown." The label must also show a lot number or other identification; percentage, by weight, of pure seed; percentage, by weight, of inert matter; percentage, by weight, of weed seeds; percentage, by weight, of other agricultural seeds; percentage of (a) germination, exclusive of hard seeds; and (b) hard seeds, if present; month and year germination test was completed; origin of Alfalfa, Red Clover, and Field Corn (other than Hybrid)—if origin is unknown, it must be so stated; name and address of the person who labeled the seed, or who sells, offers, or exposes such seed for sale; and the names of secondary noxious weed seeds and number per ounce when present singly or collectively in excess of 1 in 5 grams and 1 in 10 grams of the smaller seeds, and per pound when present in excess of 1 in 25 grams and 1 in 100 grams of the larger seeds. Secondary noxious weeds are dodder (*Cuscuta* spp.), horse nettle (*Solanum carolinense*), wild mustard (*Brassica* spp.), wild garlic and wild onion (*Allium* spp.), perennial sow thistle (*Sonchus arvensis*), corncockle (*Agrostemma githago*), buckhorn plantain (*Plantago lanceolata*), and wild radish (*Raphanus raphanistrum*). Seed is prohibited from sale for having a false or misleading label; unless the test for germination has been completed within a nine-month period or if it contains primary noxious weed seeds in excess of tolerance. Primary noxious weeds are Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), and quack grass (*Agropyron repens*).

Three hundred and two samples of field crop seeds were analyzed in the laboratory. Results of analyses, however, are given only for samples that were mislabeled. In Table 1, complete analyses are recorded; but mislabeling, indicated by boldface type, is applied only to the items named above. Wholesaler's name is in boldface type.

Table 1

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, and Place Collected.	Variety of Seed, Lot Number, Origin	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Remarks
C-249	Clover	Agricultural Products Co., W. Kingston, R. I. Berk's Discount Shopping Centre, Raynham	White Dutch, Lot No. 1026	I. 98.90 F. 98.54	0.09 0.07	0.49 0.82	0.42 0.57	*90.00 Inc. 2 14 HS 94.7	2 10-50 5 10-50	Given purity does not total 100%. Actual germination percentage and percentage of hard seed must be stated separately.

Table 1. Results of Inspection and Analyses of Field Seeds—Continued.

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, and Place Collected. Variety of Seed, Lot Number, Origin	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germi- nation %	Date of Test	Remarks
Belt Seed Co., Baltimore, Md.									
C-39	Fescue	Metropolitan District Commission Canton	L 99.12	0.18	0.70	0.00	90.00	9 1958	Other Crop Seed not declared but 1.26% found. This sample appears to be a mixture of red fescue varieties.
		Illabee Creeping Red, Lot No. 2822	F 98.32	0.16	0.26	1.26	85.00	2 1959	
C-276	Clover	Bradley's Seed Store, Providence, R. I.	L 99.00	*	*	*	90.00	*	*Required information not stated.
		Old Colony Hardware Co., Norton White, Lot No. (*)	F 99.40	0.23	0.07	0.30	88.7	6 1959	
H-108	Bentgrass	Chimney Rock Farm, Martinsville, N. J.	L 98.60	0.20	1.10	0.10	85.00	2 1959	Colonial Bentgrass declared High-Land Colonial Bentgrass found.
		First National Warehouse, Somerville Colonial, Lot No. SS-1242	F 98.98	0.33	0.69	0.00	89.00	5 1959	
B-156	Mangel	Comstock, Ferris & Co., Wethersfield, Conn.	L *	*	*	*	86.00	12 1958	*Required information not stated.
		Poster Farrier Co., Northampton Mammoth Long Red, Lot No. 3064	F 99.90	0.00	0.10	0.00	93.00	5 1959	
H-202	Fescue	Arthur R. Cone, Inc., Buffalo, N. Y.	L 99.72	0.04	0.20	0.04	92.00	2 1959	Kind of fescue must be stated. Alta is a variety of Tall fescue.
		F. Diehl & Sons, Wellesley Alta, Lot No. 36-249	F 99.65	0.11	0.15	0.09	92.00	6 1959	
H-204	Timothy	Lot No. 10 x 580.	L 99.70	0.05	0.05	0.20	82.00	3 1959	Noxious weeds excessive, 91 Buckhorn plantain found per pound none declared.
			F 99.59	0.07	0.14	0.20	84.00	6 1959	
H-211	Buckwheat	Palm Grain Co., Lowell	L 99.5	0.14	0.10	0.01	90.00	2 1959	*Required information not stated. Percentages of each kind of Buckwheat must be declared on the words "Varieties Unknown."
		Mixed, Lot No. 53 x 278	F 99.25	0.44	0.30	0.01	94.00	5 1959	

C-287	Buckwheat	Planture & Son, New Bedford "Mixed, Lot No. 58 x 287,	1	99.65	0.15	0.20	0.00	90.00	3	1959	*Required information not stated. Percentages of each kind of Buckwheat must be declared on the words "Varieties Unknown."
C-288	Clover	Medium Red, Lot No. 15 246	L F	99.67 99.62 99.25	0.09 0.00 0.04	0.24 0.04 0.22	0.00 0.34 0.49	95.00 71.19 69.21	6 1 6	1959	
C-291	Millet	Japanese No. 90 x 515	L F	98.97 97.83	0.83 1.62	0.00 0.55	0.00 0.00	82.00 86.00	1 6	1959	Noxious weeds excessive, 54 sec- ondary noxious weeds found per pound — none declared
H-166 S	Millet	Worcester State Hospital, Worcester Hungarian, Lot No. 70 x 7	L F	98.04 92.62 Hungarian 6.42 Siberian 99.04	0.74 Hungarian 6.42 Siberian 0.47	0.22 0.39	0.40 0.20	86.00 86.00 H 94.00 S	3 10	1959	Weed Seed exceeds that stated. Labeled Hungarian Millet found to be a mixture of Hun- garian, Italian and other Italian millet. "Foreign" is a part of the label and must appear on the label. Noxious weeds excessive, 517. Chaffuck found per pound — none de- clared
B-226	Ryegrass	Albert Dickinson Co., Chicago, Ill. Community Feed Stores, Inc., E. Longmeadow (*), Lot No. 038694	L F	99.58 99.55	0.18 0.19	0.22 0.21	0.02 0.05	95.00 97.00	1 5	1959	*Variety noted for Italian Community grasses tested.
B-121	Ryegrass	Eastern States Farmers' Exchange, West Springfield, Mass. Eastern States Farmers' Exchange, Northampton Domestic, Lot No. 937	L F	99.55 99.66	0.05 0.07	0.30 0.22	0.10 0.05	90.00 98.00	12 3	1958	Excessive weed in material, vari- ety name for Community grasses.
B-263	Buckwheat	Larowe Mills, Inc., Cohocton, N. Y. Frank Howard, Inc., Pittsfield Japanese, Lot No. 11339	L F	99.94 99.92	0.01	0.05	0.02	90.00 95.00	1 6	1959	*Required information not stated
B-48 S	Meadow grass	Lee Patten Seed Co., Arlington, Mass. W. E. Fernald School, Waverley Roughstalk, Lot No. BPT-1	L	90.00	0.70	9.10	0.20	85.00	1	1989	Grass seed likely to not an accepted name for Roughstalk grass (Poa trivialis)
C-411 S	Meadow grass	Worcester State Hospital, Worcester Roughstalk, Lot No. BPT-32	F	88.53	0.46	10.42	0.89	91.00	3	1959	
			L	90.00	0.70	9.10	0.20	85.00	1	1959	Meadow Roughstalk is not an accepted name for Ruff blue- grass (Poa trivialis)
			F	89.93	0.52	9.02	0.63	89.00	2	1959	

Table 1. Results of Inspection and Analyses of Field Seeds—Continued

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, and Place Collected. Variety of Seed, Lot Number, Origin	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Germination %	Date of Test	Remarks
Philadelphia Seed Co., Philadelphia, Pa.									
H-136	Ryegrass	Thomas Culkeen, Charlestown							
		Domestic, Lot No. K-297.....	L 99.50 F 99.67	0.20 0.04	0.26 0.11	0.04 0.18	92.00 94.00	2 1959 5 1959	Domestic is not an accepted name for Common ryegrass.
Wm. G. Scarlett & Co., Baltimore, Md.									
B-143 S	Clover	Belchertown State School, Belchertown							
		Medium Red (Pennscoff), Lot No. 12738 (Origin Pa.)	L 99.56 F 98.87	0.04 0.47	0.28 0.23	0.12 0.43	89.10 91.4	12 1958 3 1959	Noxious Weeds-excessive, 40 Buckhorn plantain per ounce declared -- approximately 83 per ounce found.
Seaboard Seed Co., Philadelphia, Pa.									
C-116	Clover	Arvedon Distributors, Inc., Boston							
		White, Lot No. 340-114.....	L 98.00 F 98.05	0.02 0.13	0.02 0.26	1.06 1.56	72-18 83.6	2 1959 2 1959	Given formula totals less than 100%.
Seaboard Seed Co., Arlington, Mass.									
C-282	Redtop	D. Harbeck & Sons, New Bedford							
		Lot No. 231-114.....	L 92.60 F 93.51	1.60 0.30	5.40 4.23	0.40 1.96	90.00 53.00	2 1959 7 1959	Other Crop Seed exceeds that stated. Germination less than that stated.
C-281	Timothy	Lot No. 300-335.....	L 99.60 F 99.90	0.10 0.04	0.30 0.02	0.00 0.04	85.00 90.00	3 1959 6 1959	Noxious weeds excessive. Approximately 65 Buckhorn plantain found per pound -- none declared.
		Wirthmore Stores, New Bedford							
C-2	Rye	*Seed, Balboa Type, Lot No. 811.....	L 98.25 F 98.93	0.05 0.00	1.20 0.33	0.50 0.74	85.00 92.00	8 1958 9 1959	*Variety or "Variety Unknown" required; "Type" not allowed according to the Mass. State Seed Law.

Stanford Seed Co., Buffalo, N. Y.

C-7	Rye	Wirthmore Store, Concord Winter, Balboa, Lot No. 1002.....	L 97.85 F 98.57	0.29 0.55	1.64 0.52	0.22 0.36	84.00 91.00	8, 1958 9, 1958	Noxious weeds excessive, 2 Quack grass and 4 Cockle or ap- proximately 5 noxious weeds found per pound -- none declared
H-192	Ryegrass	Domestic Lot No. 4842.....	L 99.56 F 99.65	0.14 0.17	0.26 0.18	0.04 0.00	90.00 95.00	12, 1958 5, 1959	Domestic is not an accepted name for Common Ryegrass.
C-24	Rye	Wirthmore, Stores, Framingham Common Winter, Lot No. 1003.....	L 97.50 F 97.94	0.05 0.20	1.85 1.18	0.60 0.68	85.00 90.00	8, 1958 9, 1959	Common Winter Rye not suffi- cient Variety or Variety Un- known must be graded. Noxious weeds excessive, 5 Corn- cockle found per pound -- none declared.
H-175	Ryegrass	B. T. Perennial, Lot No. 2534.....	L 96.83 F 93.41	0.38 0.27	0.39 0.35	2.40 5.97	96.00 94.00	1, 1959 5, 1959	Other Crop Seed ex weeds that stated.
H-233	Timothy	Wirthmore Stores, Ipswich Lot No. 7160.....	L 99.80 F 99.57	0.08 0.12	0.07 0.21	0.05 0.10	90.00 82.00	1, 1959 6, 1959	Noxious weed seeds excessive, 17 Blackstem plantain or approx- imately 220 seeds found per pound -- none declared.
B-236	Millet	Wirthmore Stores, Palmer Hungarian, Lot No. 2560.....	L 99.90 F 99.34	0.03 0.53	0.04 0.11	0.03 0.02	90.00 94.00	1, 1959 5, 1959	Found on millet must be stated Hungarian is a variety, not listed balled.
B-240	Ryegrass	Wirthmore Stores, So. Deerfield Domestic, Lot No. 4112.....	L 99.24 F 99.46	0.30 0.23	0.34 0.31	0.12 0.00	90.00 97.00	12, 1958 5, 1959	Domestic is not an accepted name for Common Ryegrass.
C-21	Rye	Vaughan's Seed Store, New York, N. Y. Highland Mills, Newton Highlands *Seed, Lot No. 88.56.....	L 99.00 F 98.69	0.20 0.00	0.50 0.95	0.30 0.45	85.00 82.00	6, 1958 9, 1959	*Variety or variety unknown required.

Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261 C.

Each mixture of agricultural seeds shall be labeled to show the commonly accepted name and variety of each agricultural seed component in excess of five percent of the whole and the percentage, by weight, of each in the order of its predominance. The word "mixture" or the word "mixed" shall be shown conspicuously on the label. Other label requirements for mixtures are the same as those for field seeds; hence, are not repeated here since they will be found under Table 1.

Sixty-eight mixtures were received, but only thirty-one were found to vary sufficiently from the label requirements to justify the statement of complete analysis in this table. Items which are mislabeled, also the name and address of the wholesaler, are printed in boldface type.

Table 2

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesaler, Distributor, Place Collected, Brand Name, Lot Number and Components	Components, %		Germination, %		Pure Seed, %	Weed Seed, %	Inert Matter, %	Other Crop Seed, %	Date of Test	Remarks
		Label Found	Label Found	Label Found	Label Found						
C-297	Agricultural Products Co., West Kingston, R. I. H. G. Schwartz & Sons, Fall River Highland Park Mixture, Lot No. 1017	Components:									
		Common Ryegrass	29.60	35.96	80.00	94.00					
		Kv. 31 Fescue	23.78	24.77	85.00	90.00					
		Perennial Ryegrass	22.84	25.00	90.00	94.00					
		<i>Poa trivialis</i>	9.00	5.13	85.00	70.00					
		Timothy	4.75	4.87	75.00	69.00					
		Kentucky Bluegrass	4.25	8.94	75.00	87.00					
		Dutch White Clover	1.95	2.13	82	74.18					
					Inc. HHS						
											Percentage less than that stated.
C-298	U. R. I. Lawn Seed Mixture No. 1 Lot No. 1074	Components:									
		Chewings Fescue	49.00	47.46	90.00	89.00					
		Merion Bluegrass	22.50	9.08	75.00	83.00					
		Kentucky Bluegrass	21.25	35.93	75.00	89.00					
											Percentage less than that stated.
C-298	U. R. I. Lawn Seed Mixture No. 1 Lot No. 1074	Components:									
		Chewings Fescue	49.00	47.46	90.00	89.00					
		Merion Bluegrass	22.50	9.08	75.00	83.00					
		Kentucky Bluegrass	21.25	35.93	75.00	89.00					
											Percentage exceeds that stated.
C-298	U. R. I. Lawn Seed Mixture No. 1 Lot No. 1074	Components:									
		Chewings Fescue	49.00	47.46	90.00	89.00					
		Merion Bluegrass	22.50	9.08	75.00	83.00					
		Kentucky Bluegrass	21.25	35.93	75.00	89.00					
											Percentage exceeds that stated.

B.2 S
Main Importers of Public Works, Springfield
Phila. Mixture, Lot No. 100 P

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Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

[illegible]

Oak Grove Cemetery, Medford
Special Mixture, Lot No. 218

1. 92.53 0.32 6.33 0.82 9. 1958
F. 96.13 0.17 3.62 0.08 12. 1958

Components:

Kentucky Bluegrass 27.00
Ryegrass 23.00
Cocksfoot 25.24
Cocksfoot 14.90
Perennial Rye 14.35
Perennial Rye 13.28

80.00
85.00
88.00
93.00
95.00
95.00

80.00
85.00
88.00
93.00
95.00
95.00

Germination less than that stated

David Hill Seed Corp., Baltimore, Md.

Best Seed Supply Co., Boston
David Hill Park Grass Seed Mixture, Lot No. C 79

1. 94.15 0.40 1.95 3.50 1 1959
F. 95.06 0.00 0.57 4.37 5 1959

Components:

Alma Tall Fescue 29.24
Perennial Ryegrass 29.12
Kentucky Bluegrass 20.25
Kentucky Bluegrass 10.23
Kentucky Bluegrass 5.31
Kentucky Bluegrass 50.69

75.00
85.00
85.00
90.00
90.00
90.00

75.00
85.00
85.00
90.00
90.00
90.00

Percentage below that stated

C 219 60" Premium Grass Seed Mixture, Lot No. 609 A

1. 92.15 0.70 6.90 0.25 1 1959
F. 92.05 0.14 7.47 0.34 5 1959

Components:

Kentucky Bluegrass 71.70
Kentucky Bluegrass 14.10
Kentucky Bluegrass 4.65
Kentucky Bluegrass 1.70

70.00
70.00
70.00
70.00

Percentage below that stated.

Percentage exceeds that stated

Percentage exceeds that stated.

Eastern Seed Co., Jersey City, N. J.

Atlantic Mills, Imperial Gilt, New Bedford
Spring Green Mixed Grass Seed, Lot No. 80.59

1. 97.26 0.40 1.84 0.50 3 1959
F. 95.08 0.09 1.44 3.39 4 1959

Components:

Italian Ryegrass 48.00
Perennial Ryegrass 39.20
Kentucky Bluegrass 5.80
Kentucky Bluegrass 2.30
Kentucky Bluegrass 1.96

90.00
90.00
90.00
90.00
90.00

90.00
90.00
90.00
90.00
90.00

Other Crop Seed exceeds that stated.

Percentage less than that stated

Percentage exceeds that stated

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued

Lab. No.	Wholesale Distributor, Dealer When Placed in Market, Brand Name, Lot Number and Components	Components		Germination %	Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found							
H-106	Flower Lane Farm, Martinsville, N. J. First National Store, Somerville Glenside Park Choice Mixed Grass Seed, Lot No. G-P-F-99	Components:								
		Ky 31 Tall Fescue	26.50	27.87	90.00					
		Perennial Ryegrass	25.74	37.05	90.00					
		Italian Ryegrass	18.81	8.90	90.00					
		Kentucky Bluegrass	11.05	7.46	80.00					
		Creeping Red Fescue	9.60	9.84	90.00					
		Highland Colonial Bent	4.95	6.65	90.00					
					96.55	0.45	2.30	0.70	3-1959	Percentage exceeds that stated.
					97.77	0.03	2.11	0.09	4-1959	Percentage less than that stated.
										Percentage less than that stated.
C-260	Star Market Warehouse, Watertown Star Lawn Seed Mixture, Lot No. (*)	Components:								
		Creeping Red Fescue	43.62	42.07	85.00					
		*Kentucky Bluegrass	17.11	15.46	75.00					
		***Common Ryegrass	13.50	17.15	90.00					
		*Michigan Ky Bluegrass	9.65	8.37	75.00					
		***Astoria Bent	4.88	.....	80.00					
		***Redtop	4.78	.....	80.00					
		***Agrostis spp.	.....	9.77	.....				
					93.54	0.35	5.63	0.48	3-1959	*Required information not given.
					92.82	0.10	5.90	1.38	5-1959	Other Crop Seed exceeds that stated.
	Labeled: "This formula meets requirements as outlined in Bulletin of the University of Massachusetts."	Found:	This mixture does not meet the requirements as outlined in Leaflet No. 343 of the University of Massachusetts.							
	Components:									
		Creeping Red Fescue	.....	.....	.....		
		*Kentucky Bluegrass	.....	.....	.....		
		***Common Ryegrass	.....	.....	.....		
		*Michigan Ky Bluegrass	.....	.....	.....		
		***Astoria Bent	.....	.....	.....		
		***Redtop	.....	.....	.....		
		***Agrostis spp.	.....	.....	.....		

*Percentage less than recommended
 ***Not recommended but found.
 **Percentage less than recommended
 **Recommended but not found.
 ***Not recommended but found.
 ***Not recommended but found

(Highland bentgrass and Redtop)

Loft's Pedigreed Seed Co., Jersey City, N. J.

Leedsboro Hybrid Co., New Bedford
 Wilmington Mixed Grain Seed, Lot No. 1, F 180

C-253

Components:									
Cleveland Pioneer	46.50	20.00							Cleveland Pioneer, Middlesex, Ind.
Kentucky Bluegrass	30.00	18.00	83.00						Cleveland Pioneer, not sufficient
Cleveland Blue	14.55	20.00							Cleveland Blue, not sufficient
Pottsville									Highland, Cleveland, Pottsville
Apparent to be mostly Cleveland Red because	44.25		92.00						Highland but not disclosed
Kentucky Bluegrass	14.11		96.00						Cleveland Red from frame, but
									not analyzed.

1 64.15 0.25 5.25 0.36 2 1959
 1 93.10 0.38 6.01 0.51 5 1959

John D. Lyon, Inc., Cambridge, Mass.

Black Supply Co., Waltham
 American Mixture, Lot No. 1

C-254

Components:									
Cleveland Red Pioneer	80.20	15.00	93.00						Apparent to be mostly Cleveland Red
Kentucky Bluegrass	24.50	85.00	98.00						Cross possibly exists 1959
Highland	10.00	85.00	97.00						
Kentucky Bluegrass	13.50	18.00	80.00						Percentage actually that tested

1 64.85 0.25 5.00 0.06 2 1959
 1 96.26 0.11 3.63 0.06 5 1959

New England Seed Co., E. Providence, R. I.

Atlantic City Hybrid Co., New Bedford
 Kingston Mixture, Lot No. 1906

C-255

Components:									
Cleveland Red Pioneer	40.50	88.00	93.00						Highland
Kentucky Bluegrass	29.28	75.00	84.00						Cleveland Pioneer, not sufficient
Highland	14.70	99.60	95.00						

1 60.25 0.35 0.40 0.39 3 1959
 1 90.13 0.00 3.00 2.82 5 1959

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Continued.

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Brand Name, Lot Number and Components	Components		Germination		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label	Found	Label	Found						
A-252	Pedigreed Seed Co., Jersey City, N. J. F. X. Robichaud Hardware Co., Methuen Century Park Mixed Grass Seed, Lot No. 301-259					I. 96.65 F. 92.35	0.35 0.42	2.45 5.69	0.55 1.54	4 1959 8 1959	Inert Matter exceeds that stated. (Other Crop Seed exceeds that stated.)
	Components:										
	Perennial Ryegrass....	31.21	32.42	90.00	96.00						Percentage less than that stated.
	Ky 31 Tall Fescue....	24.51	14.55	80.00	89.00						Percentage less than that stated.
	Domestic Ryegrass....	23.41	25.56	90.00	96.00						Percentage exceeds that stated.
	Creeping Red Fescue....	10.82	3.17	80.00	77.00						Germination less than that stated.
	Colonial Highland Bent....	4.69		85.00							Highland bentgrass declared a mixture of Highland bentgrass and Red Top found.
	Timothy.....	2.01	10.68	80.00	63.00						
	<i>Aegrotis</i> spp.....		5.97		76.00						
	(Highland bentgrass and Redtop)										
HH 138	Philadelphia Seed Co., Philadelphia, Pa. Thomas Cullen, Charlestown Old English Lawn Seed, All Perennial Mixture without White Clover, Lot No. 910					I. 93.05 F. 90.70	0.25 0.07	6.10 9.13	0.60 0.10	3-1959 5-1959	This mixture is not all perennial. Inert Matter exceeds that stated.
	Components:										
	Kentucky Bluegrass....	39.55	30.68	75.00	88.00						Percentage less than that stated
	Chewings Fescue....	19.80		90.00							
	Creeping Red Fescue....	14.55		85.00							
	Col. Bent Highland Type....	14.55		80.00							
	Redtop.....	4.60		90.00							
	<i>Aegrotis</i> spp.....		20.22		95.00						
	(Highland Bentgrass and Redtop)										
	<i>Festuca</i> spp.....		26.93		89.00						
	(Creeping Red and Chewings)										
	<i>Lolium</i> spp. (Common Ryegrass).....		12.87		95.00						Found but not declared. Common Ryegrass is an annual.

Wm. G. Scarlett & Co., Baltimore, Md.
Commonwealth of Massachusetts, Framingham
No. 1 Grass Seed Mixture Lot No. 16252

	L.	97.97	0.25	1.66	0.12	9 1958	Noxious weeds approximately 143 Buckhorn plantain found per pound. No dele- clared

Components:

Timothy	59.70	58.14	90.00	89.00			Actual germination and percent age of hard seeds must be stated separately.
Redtop	16.56	14.77	92.00	90.00			
Medium Red Clover	13.86	15.34	90.00	85.6			
Alsike Clover	7.85	9.58	90.00	80.16			Actual germination and percent- age of hard seeds must be stated separately.

C. P. Washburn Co., Middleboro
Maple Permanent Pasture Mixture Lot No. 16206

	L.	93.50	0.80	3.90	1.80	2 1959	Noxious weeds not declared. Ap- proximately 64 secondary noxious weeds found per pound. This is excessive. Seed exceeds that stated.

Components:

* Tall Fescue	21.50	21.85	80.00	95.00			*Not sufficient, variety must be stated.
* Ryegrass	14.90	13.71	85.00	98.00			
Timothy	14.80	16.44	85.00	77.00			** Not sufficient, variety must be stated.
Orchard Grass	13.50	11.63	85.00	81.00			
Albino Utah Cr.	13.40	14.95	85.00	84.7			
Alsike	7.00	7.51	85.00	80.14			
Kentucky Bluegrass	6.00	5.68	75.00	91.00			
Ladino Clover	2.40	2.82	80.00	88.4			

* Appears to be Kentucky 31 Tall fescue.

* Canadian Ryegrass.

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261 C—Continued.

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Name of Seed Collected, Tagged Name, Lot Number and Components	Components		Purge Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks
		Label Found	Label Found						
C-114	Seaboard Seed Co., Philadelphia, Pa. Maydon Distributors, Inc., Boston Patriet Grass Seed Mixture, Lot No. 500 229	Components: Kentucky Bluegrass... Holland Colonial Bent... Delta Kentucky Bluegrass... Creeping Red Fescue... Perennial Ryegrass... <i>Poa trivialis</i> ... Idaho White Clover... Chowdhury Fescue... Kentucky Bluegrass Varieties <i>Festuca</i> spp... (Creeping Red and Chewings)	30.00 14.70 10.70 9.50 6.31 9.00 5.00 3.92 ... 39.28 11.40	75.00 85.00 85.00 85.00 85.00 81.00 70-15 88.00 ... 85.00 96.00	91.72 90.01	0.40 0.27	7.63 7.60	0.25 2.52	1/1959 2/1959 Other Crop Seed exceeds that stated—includes 2.60% Compton ryegrass.
C-113	Villa Green Grass Seed Mixture, Lot No. 500 231	Components: Common Ryegrass... Ky 31 Tall Fescue... Perennial Ryegrass... Creeping Red Fescue... Timothy... Kentucky Bluegrass... Idaho White Clover...	39.20 19.40 15.68 7.60 5.70 4.75 1.00	90.00 85.00 88.00 85.00 80.00 75.00 70-15	93.33 90.47	0.75 1.06	5.67 6.24	0.25 2.23	1/1959 2/1959 Other Crop Seed exceeds that stated.

Not germinated—only 11 seeds found in working sample.

Stanford Seed Co., Buffalo, N. Y.

Wirtlmore Stores, So. Deerfield

Liberty Mixture, Lot No. 5001 Q

C-19

Components:

Creeping Red Fescue	23.50	85.00							
Kentucky Bluegrass	21.81	75.00							
Domestic Ryegrass	20.79	85.00							
Chewings Fescue	12.95	85.00							
Highland Colonial Bentgrass	9.80	85.00							
<i>Festuca</i> spp.	28.69	...							

Percentages exceed that stated

(Creeping Red and Chewings Fescues)

B-243

Mixture, Lot No. 5003 Q

L

F

86.45 1.00 11.55 1.00 3.1959
85.98 0.54 13.31 0.17 5.1959

Components:

Domestic Ryegrass	39.60	85.00							
Creeping Red Fescue	19.40	80.00							
Kentucky Bluegrass	14.45	75.00							
Highland Colonial Bentgrass	5.00	85.00							
Ky 31 Tall Fescue	5.00	85.00							
White Clover	3.00	83.13							
<i>Agrostis</i> spp.	...	88.00							

(Highland Colonial bentgrass—some Redtop)

Percentage less than that stated.
Percentage exceeds that stated.Percentage less than that stated.
Percentage exceeds that stated.

Valley Feed & Supply Co., Inc., Spring Valley, N. Y.

White Landscape, Brooklyn

Green Magic Mixture, Lot No. 905

C-273

Components:

Chewings Fescue	47.68	85.00							
Kentucky Bluegrass	30.65	75.00							
Colonial Highland Bent	14.84	85.00							
<i>Festuca</i> spp.	49.94	...							
Chewings with many soft types present	29.12	...							

(Contains common Kentucky Bluegrass and

1.54% Merion Kentucky Bluegrass)

Green Magic Mixture exceeds that stated.
Green Magic Mixture exceeds that stated.
Green Magic Mixture exceeds that stated.
Green Magic Mixture exceeds that stated.93.17 0.09 6.55 0.13 2.1959
86.29 0.17 11.81 1.73 5.1959

Table 2. Results of Inspection and Analyses of Mixtures of Agricultural Seeds—Sections 261 B1 and 261C—Concluded.

Lab. No.	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Brand Name, Lot Number and Components	Components		Germination		Pure Seed %	Weed Seed %	Inert Matter %	Other Crop Seed %	Date of Test	Remarks	
		Label	Found	Label	Found							
C-252	S. D. Woodruff & Sons, Inc., Orange, Conn. Schofield Hardware Co., No. Attleboro Shady Spot Lawn Seed Mixture, Lot No. A 5...	Components:										
		Creeping Red Fescue.....	29.36	90.00			96.72	0.31	2.97	0.00	2 1959	Other Crop Seed excessive—None declared.
		Perennial Ryegrass.....	24.84	90.00		91.00	94.36	0.25	5.63	1.78	5 1959	
		Chewings Fescue.....	24.52	90.00		95.00						
		Rough Bluegrass.....	18.00	90.00		93.00						
		<i>Festuca</i> spp.....	53.14									
		Creeping Red Fescue and Chewings Fescue										
		Components:										
		Creeping Red Fescue.....	29.36	90.00								
		Perennial Ryegrass.....	24.84	90.00								
Chewings Fescue.....	24.52	90.00										
A-251	Woodruff Lawn Products Assoc., Inc., Milford, Conn. Bell Hardware Co., Stonelham Park Grass Seed Mixture, Lot No. 8-1117 A....	Components:										
		Common Ryegrass.....	33.80	90.00		98.00	92.30	0.60	6.40	0.70	1 1959	Other Crop Seed exceeds that stated.
		Red Fescue.....	25.20	80.00			92.41	0.18	5.49	1.92	8 1959	
		Meadow Fescue.....	12.25	80.00		85.00						Percentage less than that stated.
		Perennial Ryegrass.....	7.35	90.00		98.00						Percentage exceeds that stated.
		Kentucky Bluegrass.....	6.35	70.00		71.00						Colonial bentgrass not sufficient—
		Colonial Bent.....	4.90	80.00								Highland colonial bentgrass found. Not declared.
		Components:										
		White Clover.....	2.45	70-10		84-13						
		Highland Bentgrass.....	4.89	97.00								

RESULTS OF INSPECTION AND GERMINATION OF VEGETABLE SEEDS

Sections 261 B2 and 261 C.

Each separate container of Vegetable Seeds must be labeled to indicate plainly the kind of seed and variety and the name and address of the person who labeled such seed or who sells, offers, or exposes it for sale. For seeds that germinate less than the Massachusetts Standard, the label must also indicate the percentage of germination exclusive of hard seed, percentage of hard seeds if present, calendar month and year the test was completed, and the words "Below Standard" in not less than 8-point type. Date of test shall not be more than nine months old, exclusive of the month in which the test was completed. Seed that has a false or misleading label may not be sold or offered for sale.

Four hundred and fifty-seven samples of vegetable seeds were received and tested in the laboratory; however, Table 3 includes only those samples that were found to be mislabeled with regard to requirements of the law.

The wholesaler's name, in all instances, and the germination for those samples of seed found below standard in germination are in boldface type. In samples for which the found germination is not in boldface, the germination is above standard but below germination stated.

Table 3

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected, Variety of Seed & Lot Number	Germination				Mass. Standard %
			Given		Found		
			%	Date of Test	%	Month of Test	
		Associated Seed Growers, Inc., New Haven, Conn.					
C-21	Potato	Clark Hardware Co., Greenfield Harris Model No. 73533, Idaho	81	8 1958	54	3 1959	60
C-238	F Beet	Farm Bureau Assoc., Waltham Detroit Dark Red No. 30541	78	11 1958	61*	5 1959	65
B-61	Onion	Skibiski Farm Supply, Inc., Sun- derland Golden Globe No. 22321	90	12 1958	76	3 1959	70
		Comstock, Ferre & Co., Wethersfield, Conn.					
H-61	Dandelion	Essex Co. Coop. Farming Assoc., Topsfield Imp. Thick Leaf, No. 3668	73	11 1958	30*	5 1959	45
B-41-S	Dandelion	Walter E. Fernald School, Waverley Arlington Thick Leaf, No. 3264	50	12 1958	21*	4 1959	45
C-200	Lettuce	D. Landreth Seed Co., Philadelphia, Pa. Smith Mills Hardware Co., Dartmouth Iceberg, No. 2519	80 or better	1 1959	46*	5 1959	80
		Woodruff's Triple "T" Seed Co., Milford, Conn.					
H-123	Lettuce	Home Products Store, W. Concord Big Boston Head	80	12 1958	31*	5 1959	80

*Below Standard and below Given Germination.

FIELD TESTS OF VEGETABLE SEEDS TYPE AND VARIETY STUDIES—SECTION 261 H

The year 1959 marks the 24th year field tests have been conducted by the State Seed Laboratory to determine field germination and trueness-to-type of certain kinds of vegetable seed offered for sale in the Commonwealth. This year these tests were run on beets and summer squash from samples collected by our State Seed Inspectors. These samples were taken from 41 retail establishments and represent the offerings of 35 wholesale seedsmen doing business in the Commonwealth.

Twenty-nine samples of summer squash representing seven varieties, and forty-nine samples of beets representing fifteen varieties, were field tested. All samples of both summer squash and beets were subjected to laboratory germination tests prior to field testing.

The summer squash was planted on May 28th. Each sample of seed was planted in duplicate plots with seven hills to each plot. There were four plants in each hill and the hills were spaced six feet by eight feet. Whenever possible, an authentic control sample was included as a basis for comparison. Observations were made several times during the growing period. All of the summer squash samples were found to be properly labeled.

On May 27th the forty-nine lots of beet seed were planted in 15-foot rows with the rows three feet apart. All samples were planted in duplicate plots, and whenever possible, authentic control samples were included for comparative purposes. The following information was obtained from all plots of both test and control varieties of beets: (1) Uniformity of top growth; (2) leaves (broad, medium, narrow, and percent red); (3) shape of root; (4) outside skin color; (5) zones (few or many, and percentage white); (6) interior color; (7) size of tap root; (8) size of collar; and (9) the rating of each lot from 1 to 9.

Among the samples of beet seed checked in the field only one, Massachusetts Laboratory No. B-60, Detroit Dark Red, Lot No. 1-96, wholesaled by F. H. Woodruff & Sons, Inc., and retailed by Skibiski Farm Supply Co. of South Deerfield, was considered to be improperly labeled (27% of the plants were found to be off-type). This sample appeared to be a mixture, since 24% of the plants had leaves that were green, broad, and tall. The root was block-shaped, medium in color and showed a heavy distinct zoning.

Although the other beet seed samples tested were considered properly labeled, they did not all give equal field performance. It cannot be emphasized too often and too strongly that high quality seed will more than pay for itself in field performance in the form of increased yields and greater uniformity.

STUDIES OF FLOWER SEEDS

Section 261 G

The year 1959 makes the twenty-fourth year of field testing by the Seed Laboratory: Field testing is the only sure way to determine the quality of flower seed offered for sale to residents of Massachusetts through various local and mail-order outlets. A total of 304 seed lots, representing seven genera and various mixtures of annuals packeted by 23 wholesalers or distributors, were obtained from 75 retailers or grower sources by the State Seed Inspectors. All except the mixtures were subjected to germination tests in the Laboratory before field testing.

The seven genera included in the 1959 tests gave a complete and thorough picture of the quality of seed within these genera. The genera and number of each field tested were 30 *Antirrhinum*, 33 *Dianthus*, 16 *Gaillardia*, 136 *Tagetes*, 36 *Tropaeolum*, 24 *Salvia*, and 30 *Verbena*. In addition to these seven genera which were field tested, similar plantings were made of seven annual flower seed mixtures offered by some of our wholesale seedsmen.

All the flower seeds were planted on May 26th and 27th. Seeds were sown in 10-foot rows and the rows were three feet apart. In all cases one packet of seed was sufficient to plant one row. The results listed in Table 4 include only those samples considered "worthless for sale", or those with satisfactory laboratory tests but found unsatisfactory in the field for other reasons. A sample was considered "worthless for sale" if it germinated 50 per cent or less than the tentative germination "standard" for flower seed. The tentative "standards" for the respective genera included in the field trials are as follows: *Antirrhinum* 55%; *Dianthus* 70%; *Gaillardia* 45%; *Tagetes* 65%; *Tropaeolum* 60%; *Salvia* 50%, and *Verbena* 40%. On the basis of the laboratory tests, 0.6% of the total of 296 lots were "worthless for sale" and 12.8% were below the tentative "standards". This is an improvement over the 1958 seed, when 4% of the total of 373 lots were "worthless for sale" and 28.9% were below the tentative "standards."

The following table gives a breakdown of the laboratory germination tests of the seven genera tested.

Genera	Germination Standard	Total Number	No. Below Standard	No. "Worthless"	% Below Standard	Average Germ. %	Av. Germ. % Above Standard
<i>Antirrhinum</i>	55	30	4	0	13	71.2	16.2
<i>Dianthus</i>	70	25	3	0	12	82.8	12.8
<i>Gaillardia</i>	45	16	4	0	25	60.1	15.1
<i>Tagetes</i>	65	136	13	0	9	81.8	16.8
<i>Tropaeolum</i>	60	35	4	0	11	76.6	16.6
<i>Salvia</i>	50	24	1	0	4	68.3	18.3
<i>Verbena</i>	40	30	12	2	16	42.3	2.3

Table 4 lists those samples that were found in the field tests to differ in performance from the information stated on the seed packet, plus those samples that germinated 50% or less than the tentative "standards." Also included are observations made on the annual flower mixture packets.

The observations on the annual flower mixture packets should not be construed to mean unsatisfactory in any respect, but should be taken merely as observations on findings.

Table 1

**Field Test Performances of Flower Seed Lots Tested and Found
Unsatisfactory in some Respects, Amherst, Mass., 1959**

Lab. No.	Kind of Seed	Wholesale Distributor, Dealer When Other Than Wholesale Distributor, Place Collected and Variety of Seed	Laboratory Germination %	Field Test Performance
C-121	Verbena	Joseph Breck & Sons, Inc., Boston, Mass. Sparkle mixed.....	17**	Satisfactory.
A-24	Dianthus	W. Atlee Burpee Co., Philadelphia, Pa. Central Paint & Supply Co., Hyde Park Fordhook Favorites, Single & Double	89	Poor Mixture; 75% single.
A-140	Tagetes	Comstock, Ferre & Co., Wethersfield, Conn. Wm. H. Casey, Store, Inc., Milford Carnation Flowered Mixed.....	69	Poor Mixture; 90% orange.
A-170	Verbena	Crosman Seed Corporation, Rochester, N. Y. S. S. Kresge Co., Boston Hybrida Grandiflora-Spectrum Red .	16**	Satisfactory.
A-208	Verbena	J. B. Rice Seed Co., Sushan, N. Y. McClellan Stores, Southbridge Hybrida Pink.....	35	100% scarlet red color.
A-220	Tropaeolum	Village Hardware Co., Athol Dwarf Mixed.....	58	15% climbing type.

OBSERVATIONS ON THE ANNUAL FLOWER MIXTURES

A-196	Annual Flower Mixture	Comstock Ferre & Co., Wethersfield, Conn. Harvey's Hardware Store, Falmouth	9 species and/or varieties found.
A-121	Wild Garden Mixture	Ferry Morse Seed Co., Detroit, Mich. Allen Hardware Co., Needham	12 species and/or varieties found.
A-51	Cut Flower Mixture	Fredonia Seed Co., Fredonia, N. Y. M. R. Loud & Co., South Weymouth	12 species and/or varieties found.
A-179	Treasure Garden Annuals	Germain's, Los Angeles, Cal. F. W. Woolworth Co., Fall River	6 species and/or varieties found. Predominantly tall Marigold.
A-20	Annual Flower Garden	Chas. C. Hart Seed Co., Wethersfield, Conn. New Style Hardware Store, Inc., Roslindale	12 species and/or varieties found
A-151	Surprise Garden Mixture	Vaughan's Seed Store, New York, N. Y. Wirthmore Stores, Concord	6 species and/or varieties found.
A-73	Annual Flower Mixture	Woodruff's Triple "T" Seeds Inc., Wethersfield, Conn. Cohasset Hardware Co., Cohasset	7 species and/or varieties found, including cabbage.

**Laboratory germination results indicate seeds "worthless for sale" but the plants obtained in the field were satisfactory.

**Table 5. Summary, by Wholesalers, of the Performance
of Flower Seeds in the Field**

Seeds Packed by	Total No. Samples Tested	*No. Samples Satisfactory	**No. Samples Un-satisfactory
Ball, George J. Co..... W. Chicago, Ill.	10	10	0
Breck, Joseph & Sons, Inc..... Boston, Mass.	13	13	0
Burpee, W. Atlee Co..... Philadelphia, Pa.	22	21	1
Comstock, Fern & Co..... Wethersfield, Conn.	11	10	1
Crosman Seed Corp..... Rochester, N. Y.	22	22	0
De Jager & Sons..... So. Hamilton, Ill.	6	6	0
Ferry-Morse Seed Co..... Wethersfield, Conn.	27	27	0
Fredonia Seed Co..... Fredonia, N. Y.	20	20	0
Germain's, Inc..... Los Angeles, Cal.	3	3	0
Harris, Joseph Co..... Rochester, N. Y.	11	11	0
Hart, Chas. C. Seed Co..... Wethersfield, Conn.	14	14	0
Hawkins, Budd D..... Wethersfield, Conn.	6	6	0
Mandeville & King Co..... Rochester, N. Y.	26	26	0
Mitchell, Henry Co..... Philadelphia, Pa.	2	2	0
Northrup, King & Co..... Minneapolis, Minn.	28	28	0
The Page Seed Co..... Greene, N. Y.	8	8	0
Pelletized Seed Co..... New York, N. Y.	4	4	0
Rice, J. B. Jr., Co..... Shushan, N. Y.	18	16	2
Rice, Jerome B. Co..... Cambridge, N. Y.	5	5	0
Sears, Roebuck & Co..... Chicago, Ill.	8	8	0
Skidelsky, Henry Co..... New York, N. Y.	2	2	0
Vaughan's Seed Store..... New York, N. Y.	26	26	0
Woodruff's Triple "T" Seed Co..... Wethersfield, Conn.	12	12	0
	304	300	4

*Samples that are found to agree with the label and whose germination is above the "worthless for sale" point.

**Samples found that do not agree with the label, or samples whose germination is considered "worthless for sale", or samples labeled mixtures that do not contain an adequate proportion of different types to be considered good mixtures.

Table 6. Summary, by Wholesalers, of the Total Number of Official Samples Tested in the Seed Laboratory

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Agricultural Products Co., W. Kingston, R. I.	.....	.....	.....	1	0	1	4	2	2
Associated Seed Growers, Inc. Milford, Conn.	65	62	3	.....	.....	.....	.....	.....	.....
Belt Seed Co., Baltimore, Md.	.....	.....	.....	6	5	1	4	9	4
Better Turf Seed Co., Jersey City, N. J.	.....	.....	.....	1	1	0	.....	.....	.....
Boston Market Gardener's Assoc., Boston, Mass.	7	7	0	.....	.....	.....	.....	.....	.....
Bradley Seed Store, Providence, R. I.	.....	.....	.....	1	0	1	.....	.....	.....
Breck, Joseph & Sons, Boston, Mass.	27	27	0	.....	.....	.....	2	2	0
Bristol Gardens Co., Philadelphia, Pa.	.....	.....	.....	.....	.....	.....	1	0	1
Burpee, W. Atlee Philadelphia, Pa.	26	26	0	.....	.....	.....	.....	.....	.....
Chimney Rock Farm, Martinsville, N. J.	.....	.....	.....	1	0	1	.....	.....	.....
Comstock, Ferre & Co., Wethersfield, Conn.	82	80	2	1	0	1	.....	.....	.....
Cone, Arthur R., Inc., Buffalo, N. Y.	1	1	0	70	64	6	2	1	1
Crawford's, E. Providence, R. I.	.....	.....	.....	2	2	0	1	0	1
Crosman Seed Corp., Rochester, N. Y.	12	12	0	.....	.....	.....	.....	.....	.....
Culkeen, Thos. F., Charlestown, Mass.	.....	.....	.....	3	3	0	3	0	3
Dickinson, Albert Co., Chicago, Ill.	.....	.....	.....	15	14	1	.....	.....	.....
Druid Hill Park Seed Co., Baltimore, Md.	.....	.....	.....	.....	.....	.....	2	0	2
Eastern Seed Co., Jersey City, N. J.	.....	.....	.....	.....	.....	.....	1	0	1
Eastern States Farmers' Exchange, W. Springfield.	21	21	0	10	9	1	3	3	0
Essex County Coop. Farmers' Ex- change, Topsfield, Mass.—	5	5	0	.....	.....	.....	.....	.....	.....
Ferry-Morse Seed Co., Wethersfield, Conn.	19	19	0	.....	.....	.....	.....	.....	.....
Flower Lane Farms, Martinsville, N. J.	.....	.....	.....	3	3	0	2	0	2
Fredonia Seed Co., Fredonia, N. Y.	10	10	0	.....	.....	.....	.....	.....	.....

Table 6. Summary, by Wholesalers, of the Total Number of Official Samples Tested in the Seed Laboratory—Continued

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Funk Bros. Seed Co., Bloomington, Ill.				1	1	0			
Harris, Joseph & Co., Rochester, N. Y.	26	26	0				1	1	0
Hart, Chas. C. Seed Co., Wethersfield, Conn.	38	38	0				1	1	0
Hawkins, Budd D., Wethersfield, Conn.	8	8	0						
Hoffman Farm Seeds, Inc., Landisville, Pa.				3	3	0			
Hubbard-Hall Co., Waterbury, Conn.							3	3	0
Independence Hall Seed Co., Baltimore, Md.				1	1	0	2	2	0
Landreth Seed Co., Baltimore, Md.	13	12	1				1	1	0
Larowe Mills, Detroit, Mich.				1	0	1			
Lawn Products Co., Philadelphia, Pa.							1	1	0
Lee Patten Seed Co., Arlington, Mass.				14	12	2	3	3	0
Loft Pedigreed Seed Co., Pawtucket, R. I.							1	0	1
Lyon, John D., Inc., Cambridge, Mass.				3	2	0	2	1	1
Mandeville, King & Co., Rochester, N. Y.	2	2	0						
Michael Leonard Seed Co., Davenport, Iowa	3	3	0						
New England Seed Co., Providence, R. I.							2	1	1
Northrup, King & Co., Minneapolis, Minn.	2	2	0	1	1	0			
Page Seed Co., Greene, N. Y.	16	16	0	1	1	0			
Pedigreed Seed Co., Jersey City, N. J.							1	0	1
Philadelphia Seed Co., Philadelphia, Pa.				5	4	1	2	1	1
Randolph Seed Co., Randolph, N. Y.	5	5	0						
Rice, J. B. Jr., Shushan, N. Y.	3	3	0						
Rice, Jerome B. Seed Co., Cambridge, N. Y.	6	6	0						

Table 6. Summary, by Wholesalers, of the Total Number of Official Samples Tested in the Seed Laboratory—Continued

Wholesale Distributors	Vegetables			Field Crops			Mixtures		
	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled	Samples Tested	Correctly Labeled	Mislabeled
Isaac C. H. Philadelphia, Pa.	5	5	0						
Scarlett, W. G. & Sons, Baltimore, Md....				41	40	1	4	2	2
Seaboard Seed Co., Philadelphia, Pa.				16	12	4	3	1	2
Scott, O. M. & Sons, Marysville, Ohio.							2	2	0
Stanford Seed Co., Buffalo, N. Y.				53	46	7	3	1	2
Sunrise Farms, Martinsville, N. J.							1	1	0
Tri-State Seed Co., Philadelphia, Pa.	4	4	0						
Twiss Pines Farm Martinsville, N. Y....				1	1	0			
Valley Feed & Supply Co., Spring Valley, N. Y....							2	1	1
Vaughan's Seed Store, New York, N. Y....	35	35	0	1	0	1			
Whitney Seed Co., Buffalo, N. Y....				45	40	5	5	5	0
Woodruff, F. H. & Sons, Milford, Conn.....	3	3	0				1	1	0
Woodruff's Lawn Products Co., Milford, Conn.....							1	0	1
Woodruff, S. D. & Sons, Orange, Conn.....							1	0	1
Woodruff's Triple "T" Seed Co., Wethersfield, Conn.....	8	7	1						
Wirthmore Feed Stores, Ipswich, Mass.....				1	0	1			
Total	457	450	7	302	266	36	68	37	31

Massachusetts Vegetable Seed Standards

The amended seed law requires in Section 261 I that the Director of the Massachusetts Agricultural Experiment Station shall, after reasonable notice and hearing and with the approval of the Commissioner of Agriculture, adopt vegetable seed germination standards, prescribe rules and regulations, and in like manner modify or amend rules and regulations governing the methods of sampling, inspecting, analyzing, testing, and examining agricultural, vegetable and flower seeds and the tolerances to be followed in administration.

A hearing for the above stated purpose was held in Horticultural Hall, Worcester, Massachusetts, at 3 P. M., October 18, 1946. The following set of standards was so approved and adopted:

KIND OF SEED	GERMINATION STANDARD %	KIND OF SEED	GERMINATION STANDARD %
Artichoke (<i>Cynara scolymus</i>)....	60	Kale.....	75
Asparagus.....	70	Kohlrabi.....	75
Bean, Lima.....	70*	Leek.....	60
Bean, Scarlet Runner.....	75*	Lettuce.....	80
Bean, Other Varieties.....	75*	Muskmelon.....	75
Beet.....	65	Mustard.....	75
Broccoli.....	75	Okra.....	50*
Brussels Sprouts.....	70	Onion.....	70
Cabbage.....	75	Parsley.....	60
Cabbage, Chinese.....	75	Parsnip.....	60
Carrot.....	55	Peas.....	80*
Cauliflower.....	75	Pepper.....	55
Celeriac.....	55	Pumpkin.....	75
Celery.....	55	Radish.....	75
Chard, Swiss.....	65	Rhubarb.....	60
Chicory.....	65	Rutabaga.....	75
Citron.....	65	Salsify.....	75
Collard.....	80	Sorrel.....	60
Corn, Sweet.....	75	Soybean.....	75
Cress, Garden or Curled.....	40	Spinach, Common.....	60
Cress, Water.....	35	Spinach, New Zealand.....	40
Cucumber.....	80	Squash.....	75
Dandelion.....	45	Tomato.....	75
Egg Plant.....	60	Tomato, Husk.....	50
Endive.....	70	Turnip.....	80
Fetticus (Corn Salad).....	70	Watermelon.....	70

*Including Hard Seeds. However, the percentage of germination, exclusive of hard seeds and the percentage of hard seed, if present, must be stated.

LABORATORY REGULATIO

FEES FOR TESTING SEED

The following regulations and fees have been approved by the Director of the Massachusetts Agricultural Experiment Station.

FIELD CROPS:

KIND OF SEED	PURITY	GERMINATION	PURITY AND
	ONLY	ONLY	GERMINATION
Alfalfa, Rape, Ryegrasses, Soybeans, Timothy.....	\$1.00	\$0.50	\$1.25
Cereals, Buckwheat, Sudan Grass, Vetches.....	1.25	.50	1.50
Clovers, Fescues, Reed Canary Grass.....	1.00	.50	1.50
Brome Grass, Millets.....	1.50	.50	2.00
Bentgrasses, Bluegrasses, Orchard Grass, Redtop....	2.00	.50	2.25
Redtop (Unhulled).....	2.50	.50	2.75

Mixtures: Lawn, Pasture, Mowing, etc.

Purity only.....\$2.50

Germination only..... .50 for each component

Purity and Germination..... 2.50 + .50 for each component

Special Mixtures: Consisting of two kinds of cereals, two kinds of clover only, or Timothy and one kind of clover

Purity only..... \$1.25

Germination only..... .50 for each component

Purity and Germination..... 2.00

Vegetables: Germination tests for all kinds of vegetable seeds, 30 cents each.

Cleaning Tobacco Seed: For each lot of one pound or less, based on the weight of seed as received for cleaning, 50 cents.

Kinds of Seed Not Listed: Fees for testing and for other seed determinations not listed will be based on the time consumed in making the test or for other service requested.

Free Tests: During any one calendar year, the Seed Testing Laboratory will allow two free tests of vegetable or tobacco seed to any person residing or doing business in the Commonwealth.

The minimum weights of samples to be submitted for analysis are:

- Two ounces of grass seed, white or alsike clover, or seeds not larger than these.
- Five ounces of red or crimson clover, alfalfa, ryegrasses, millet, rape, or seeds of similar size.
- Eight ounces of all mixtures of seed, including Lawn grass mixture Pasture mixtures, Mowing mixtures, etc.
- One pound of cereal, vetches, or seeds of similar or larger size.

The minimum number of seeds of any kind to be submitted for a germination test is 400.

Samples should be taken so as to represent correctly the lot sampled, each placed in a strong container, the parcel of samples securely wrapped and addressed to Seed Laboratory, Agricultural Experiment Station, Amherst, Mass.

Checks or Money Orders must be made payable to the University of Massachusetts and sent to the Treasurer's Office.

In no case will the final report for work done be rendered until all fees are paid.

